HARVARD BUSINESS REVIEW

VOLUME XIV NUMBER 4

SUMMER, 1936

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PUBLISHED QUARTERLY

For the Graduate School of Business Administration, Harvard University at 212–220 York Street, York, Pennsylvania

By McGraw-Hill Book Company, Inc., 330 West 42nd St., New York City, Ralph S. Foss, Publishing Director

The subscription terms: $5 a year; single copies, $1.25. Entered as second class matter November 6, 1929, at the Post Office at York, Pa., under the act of March 3, 1879. Address editorial correspondence to the Editor, Morgan Hall, Soldiers Field Station, Boston, Massachusetts.

All communications concerning advertising should be addressed to our offices in New York.

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An index to the HARVARD BUSINESS REVIEW is published annually with the Summer number. The contents are also indexed in the *Reader's Guide to Periodical Literature*, and *The Industrial Arts Index*.

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McGRAW-HILL BOOK COMPANY, Inc.

330 WEST 42ND STREET NEW YORK, N. Y.

HARVARD BUSINESS REVIEW

Summer 1936 — *Volume XIV* *No. 4*

THE NEW DEAL IN ANCIENT GREECE[1]

BY CHARLES J. BULLOCK

THE Greek political world was the most marvellous a political scientist ever had spread before him for observation and study. It was made up of hundreds of little city states, in which things happened quickly. It was a three- or four-hundred ring political circus, with something happening in some of the rings all the time and frequently several major acts going on in different rings at the same time.

Out upon that world the great political philosophers of antiquity looked, and from their studies and observations Plato, Aristotle, and Polybius wrote their immortal works. Modern historians have had much to say about it, but frequently they have been people who call themselves liberals or people who call themselves conservatives; and they have gone back to Hellas to fight their battles over the merits and demerits of democracy. The discussion has centered largely around Athens, the most interesting of all the Greek city states, which has been the exposed salient on which this controversy between historians has centered. There Mitford goes, for example, in his day, to find examples of the horrible workings of democracy, with the result that in the next generation George Grote repairs to the same city and the same sources of information to write a glorified history of Athenian democracy.

I am going to say nothing more about the historians, and shall say but little about the ordinary sources of information. But I am going to lay before you some materials which, over a period of forty years and more, I have gathered, a bit now and a bit then, from sources that were to me most interesting and seemed to have the greatest probative value. I shall draw chiefly upon Greek anecdotes, upon Greek plays, and upon the orations of the great Attic orators.

[1] An address delivered at the annual meeting of the American Association of Collegiate Schools of Business, at the Harvard Graduate School of Business Administration, Soldiers Field, Boston, Massachusetts, April 24, 1936. Copyright 1936 by Charles J. Bullock.

Greek Anecdotes

Beginning with anecdotes: If we had a complete classified collection of all the anecdotes ever in circulation among the ancient Greeks, and preserved by Plutarch and others because they were such good anecdotes, we could perhaps construct from them a history of Greece better in some ways than any historian has ever written, and we should be especially helped by anecdotes of a humorous character.

I will begin with the story of King Archelaus and his barber. The king sits down one morning and his barber inquires: "How shall I cut your hair?" to which comes the terse answer: "In silence." Now, of course that doesn't *prove* that there ever was a King Archelaus; and, if there was such a king, it doesn't *prove* that *he* ever made that reply. Some good story-teller may have made it up and fastened it on King Archelaus. Many stories ten or a dozen years ago were made up and fastened onto Henry Ford and his celebrated product. But it does demonstrate one thing beyond the reach of doubt or peradventure, something that the most confirmed historic skeptic cannot question; namely, that the Greeks not only had barbers, but that such tonsorial artists sometimes tired their patients by their loquacity.

There is no historical evidence of greater probative value than a humorous story, properly interpreted. If you have never studied Greek originals and if you grew up after our "educators" debased American education by eliminating the classics, your Greek education might well begin with that story.

If time permitted I should like to go on with stories about barbers that were current among the Greeks. You can learn much of politics from them, and the same is true of stories about barbers that were current in Rome. The Greek stories turn frequently on the same point, namely, what tyrants' barbers might do to tyrants' throats. When Plato was visiting Dionysius, tyrant of Syracuse, he expressed various unfavorable views about tyranny and tyrants. Finally Dionysius said, in substance: You will admit that at least a tyrant has courage. Plato replied, in substance: I don't know about that; he is always afraid of his barber. And Dionysius was afraid because there is another story to the effect that one day his barber expressed the happy thought that it would be very easy for him to cut the tyrant's throat. This remark came to Dionysius, who, like other tyrants, lived in fear of edged or pointed tools; and straight-way he sent the man—his own barber—to the celebrated quarry where he kept political and other prisoners.

Greek stories about barbers tend in that direction; Roman stories in quite another. They tend in the line we find in the great Roman satirists, and relate to the wealth that barbers frequently acquired in ancient Rome and what they did with it. Emperor Julian one day is said to have sent for his barber, and when the man came in elaborately and ambitiously arrayed, he said: "I didn't send for my High Treasurer. I sent for a barber."

From barbers, who take us fairly deeply into Greek and Roman life, let us turn to politicians and begin with a fable of Aesop's which I found in a public place, namely, in Aristotle's *Rhetoric* (2:26) only a year ago, but have not yet found in any collection of Aesop's fables. The story is that Aesop, who not only made fables but also was a politician and advocate in Samos where he lived, told this story while he was de-

fending a Samian demagogue accused of a capital political offense. Aristotle tells this story in a part of his book in which he is setting forth how public speakers may use stories effectively in their arguments. He says that Aesop, defending this demagogue in the assembly, told the people of Samos that they should remember the fox who was caught in a cleft in some rocks, from which he was unable to extricate himself. While lying there he suffered greatly from fleas, and finally a hedgehog came by and took pity on him, asking him if he could not remove the tormentors. This the fox refused, saying: "They are already full of me and they are not now sucking much more blood, but if you take these away, others will come and, being thirsty, will drink what little blood I have left." And then Aesop concluded: "O men of Samos, you, like the fox, will suffer no more harm from this man because he is already wealthy. But if you put him to death, other demagogues will come who will be poor, and they will steal and squander the public money."

When you laugh at this, you enter into the feelings, the life, and the thought of the ancient Greeks. That this was a good story about Greek politicians is evidenced by the fact that Aristotle put it in his *Rhetoric* as an example for political speakers, again the best sort of historical evidence.

There are many more. There is the story of Themistocles and Aristides, who weren't the best of friends. Themistocles, having made a "crack" at his rival, received this in reply from Aristides the Just. He was arguing that what a great general most needed to know was how to anticipate the plans of the enemy, and Aristides replied: "That is indeed necessary, Themistocles; but the honorable thing, and that which creates a real general, is control over his fingers." Now, to understand that, remember that when a Greek general was put in command of an army he was expected to march with his army and somehow to finance it; with the result that he not only financed the army, but frequently financed himself. Themistocles, who was worth only three talents when he came into office, when he was finally banished and after he had managed, with the aid of friends, to sequester a good part of his ill-gotten gains, nevertheless left something like eighty talents which the government succeeded in confiscating.

There is plenty of other evidence. After these stories we are prepared to accept what Polybius, the great philosophic historian, wrote about Greek officials. He said the Romans in his day still respected their solemn oaths of office and that their magistrates were honest, but the Greeks had emancipated themselves from old-fashioned religious superstitions. They had, therefore, no regard for oaths; and the result was that men handling public money, if entrusted with only a single talent and given ten checking clerks, ten seals, and twenty witnesses, could not keep their faith. It is hard, he remarked, to find a man who keeps his hands off public money and maintains a clean record. To one who really knows Polybius that statement is good historical evidence; but to one who does not know, Aesop's fable is very much better. When you put the two together the case is closed, and you know a good deal about Greek politicians. This will give you a pretty fair introduction to the New Deal in ancient Greece.

Greek Plays

Passing from anecdotes to plays, we find in several of Aristophanes's come-

dies some indubitable bits of evidence concerning Greek political and economic life. For example, in *The Peace* there is a scene in which, after the conclusion of the Peloponnesian War, the people pour into the Athenian market place rejoicing and conversing in a manner that compels the attention of the modern reader. Hermes begins: "Look here! See how the reconciled cities greet and blend in cheerful intercourse and laugh for joy." And Trygaeus replies: "Yes, and survey the people; by their looks you can discern their trades." Then Hermes: "Oh dear! Oh dear! Don't you observe that man that makes the helmet crests tearing his hair? And there is a pitchfork seller. See how he fillips the sword cutler there." Evidently the munition makers are out of luck and Athenian manufacturers of agricultural implements are going to do some business. The farmers had all been driven into Athens during the war, while the munition makers were doing all the business and agricultural implement makers had been out of luck.

Then Trygaeus continues: "See how pleased the sickle maker looks, joking and poking the spear burnisher! If there be any that delights in war, King Dionysius, may he never cease picking spear heads from his funny bones." Then as now there was nothing funny about a spear head hitting a funny bone, and here is the reaction, as a great dramatist saw it, of the Athenian audience to the return of peace. It tells you much about the ancient Greeks, how much they were like ourselves, and how the munition business and agricultural implement business in Greece resembled the munition business and the agricultural implement business in our own time.

New Deals

Now we come to New Deals. Of course, anything that is trumpeted abroad as new is always old. There really isn't anything fundamentally new. And if it is called a deal—then you know a lot more about it. If a fellow sits down at a little square table covered with green cloth and says he is going to give everybody an honest deal, somebody is sure to call for a new deck of cards. Nobody who intends to deal the cards honestly ever says anything about his dealing; he just sits down and deals, without talking about it. If he begins talking about his square dealing or new dealing or any other kind of dealing, the other players will want a new deck of cards, and then will watch subsequent operations very closely. So much for dealing.

We can begin with Solon. A deal in politics always means that people who have money or other valuables in their pockets will do well to button up their coats tightly because something is likely to be coming their way. In Solon's time the city of Athens was in a very bad condition. It had changed from a small city into a great commercial center. A great deal of wealth had been made there, and inevitably it was very unequally distributed. Men having wealth evidently undertook to rule the city. Reverses of some kind in economic and commercial conditions had reduced many people to want, while many were in debt; so that a political revolution threatened. Out of such things revolutions have often come and probably often will.

Solon himself said in some of his verses: "But of themselves in their folly, the men of the city are willing our great city to wreck, being won over

by wealth. . . . Great men ruin the city: for lack of understanding under a despot's yoke lie the people enslaved." And that was written not so many years before Pisistratus did establish himself as despot in Athens.

Finally, at the opening of the sixth century, Solon was invited to mediate between the contending factions, and he carried through his famous reforms, which I cannot discuss in detail. But one of his reforms was that he cancelled at least a large part of the outstanding debts, which entitles it to the name of deal. There were two plans for reform, both of which might have been called new and progressive. One was cancellation of debts and the other was redistribution of lands. Solon took both under consideration and everybody naturally was speculating as to which one of these new deals he would adopt; or whether he would try both; or first try one and, if that didn't work, try the other; but always try something. While he was considering the matter he had to do what practically everybody under such circumstances does—he had to confide his real designs to somebody; nobody can keep such a secret one hundred per cent to himself. So Solon told this to three friends in whom he especially confided, informing them that he was going to cancel debts and that he was not going to redistribute lands. Then the three friends, like actors in our movies, evidently said: "That's all I want to know!"

Athens was a commercial city. A thing like that couldn't be proposed without merchants speculating on which particular reform was going to be adopted. These three fellows went out and borrowed a lot of money with which they bought a lot of land before the story leaked out. If they hadn't got ahead of the leak, of course the land would have gone up and the operation would not have been so attractive. They then held their lands bought with borrowed money, and finally debts were cancelled. The story presently got out, and naturally made a sensation which reacted on Solon; but he was able to show that he had himself cancelled debts owing him, and that he was the first man to do that in Athens, so that he saved the situation.

Now, that is the story. It may not be true, but some things are true about it. It is the sort of thing that must have happened somewhere. Even a clever story-teller could never have made that up out of whole cloth. No man contemplating that sort of thing could keep it absolutely to himself. He would have had to confide his secret to some of his friends who were absolutely to be trusted, and absolutely sure to go out and act upon it. So much for the first New Deal of which we have any very clear record. It was perhaps an old thing when Solon tried it, but after his time it became pretty common in Greece. Now we pass to Greek liberality.

Greek kings had always maintained the tradition of liberality; many of their subjects were free to come and dine at the royal tables. After the Persian Wars were over and the Athenian conservatives, or oligarchs as they were called, and the Athenian democrats squared away for another tussle over "social justice," the leader of the conservatives was Cimon, a very wealthy man. Cimon was liberal—in a conservative way. Perhaps you laugh too soon. What I was going to say was that he was liberal with his own money. He took down his fences and invited his fellow countrymen to come into his fields and help themselves. He provided a meal every day for anybody

who wanted it. He was very liberal and very popular in a conservative way, with his own money.

Pericles, the leader of the popular party, could not possibly meet such competition. He had inherited a comfortable estate which he managed in thrifty fashion. He is credited with having been one of the few Athenian statesmen who were absolutely honest, like Aristides and Phocion. They are a fairly lonesome trio in the Grecian gallery of famous politicians. But Pericles had to compete with Cimon; and since he couldn't be liberal himself, he inaugurated a new kind of liberality—with other people's money. That is the progressive way of doing it.

He began by instituting a system of paying citizens for every public duty. Up to that time Athenians had served in the army without pay. They had served on juries without pay. They had come to the popular assembly without pay. They had held public office without pay and for the honor of the thing. Pericles began by paying for jury duty and to this he added various amusements at public expense. After his time payment for attending the popular assembly was instituted. Presently, of course, the attendance at assemblies increased greatly; and it was observed by Aristotle that, when cities began to pay people for attending assemblies, the poor always had more leisure than the rich to whom two obols were nothing while they had other uses for their time.

In these ways and others a large part of the population of Athens came onto the city. In order that as many people should be on the pay roll as possible, they increased the number of jurors to six thousand. There were then thirty thousand citizens; one in five was a juror on pay, and you have popular liberality. It was Pericles who introduced this particular New Deal. Once established, of course, there was no end to it; and presently pay had to be increased, and was increased.

To finance these things at first was easy, because, in the Confederacy of Delos, Athens had become the leader. Whereas the treasury had once been on the Island of Delos, the Athenians presently brought it to Athens where it would be perfectly safe. They put it up on the Acropolis in the temple of the goddess where it was perfectly inaccessible to others, but of course they themselves could borrow from the goddess if they had to.

But although easy to finance at first, the system grew with what it fed on; and the time came, after they had got into the wars with Lacedaemon and Pericles had passed from the scene, when Cleon, the best representative of the Greek demagogue of the worst type, increased the pay and the other distributions. Pericles was a demagogue or popular leader of the best type, able, honest, and very patriotic, but playing politics in the way he had to play it in order to match the conservative liberality of Cimon. Cleon increased the pay and the other distributions, and then had to increase the tribute from the allies in order to pay the bills. Financing the doles, the pay of six thousand jurors, and all that sort of thing was easy as long as the tribute lasted; but when the allies revolted and the tribute declined, then the money had to be raised at home and everything was different. The Athenians had not only levied tribute on the allies, but they made them come to Athens to conduct their law suits. That meant that the revenue of the law courts was increased, as Xenophon pointed out in his *Revenues of Athens*, and also that the yield

of port dues was increased because when these people came they brought their provisions and other things with them. Moreover, since the law suits were not always decided quickly, there was a considerable demand for living accommodations as well as other things, and the city prospered greatly.

Athenian finances were never well managed. There was no central treasury into which all revenues were turned and out of which all expenditures were made, but there were separate treasuries for the different departments of government. For example, there was a separate treasury for the courts; fines and confiscations went there, and out of it came the pay of the judges. If there wasn't enough money in any year, because the fine and confiscation business wasn't good, the judges just didn't get their pay. So the administration of justice in the law courts was poisoned by this very fact of the existence of a separate treasury.

Moreover, there was an old custom which existed not only in Athens but everywhere else, a custom which long antedated payments for service or the institution of the system of doles. Greek states, if in any year they came out with a surplus, were accustomed to distribute it among their people; and in Athens a surplus in any of the separate treasuries was likely to be distributed even though other treasuries showed a deficit which had to be made good somehow.

To remedy that, a capable politician and good financier devised what appeared to be a great reform. Under it, surpluses originating in any of the treasuries, instead of being distributed, went into a special treasury which, it was hoped, would be prudently managed. But, unfortunately, this was not what happened; and the result was that the change created a central reservoir to which the people of Athens more and more looked for regular distributions.

Now I come to public works, as a measure of relieving distress and beautifying the city. There hadn't been many such things in Athens prior to the time of Pericles; but he, a man of ideas and with the revenues of the Confederacy to draw upon, was able to institute and carry through those magnificent improvements that made Athens so famous, both in antiquity and even down to the present day. I will not go into them except to point out, first, that they were made largely out of the money of the Confederacy; and second, that Phidias, the master builder and master architect, came out of the great enterprise badly smirched.

The story isn't clear. One version is that, when he was accused of having made away with gold, the authorities took down all the gold plates on the enormous image of the goddess, weighed them, and found that no gold had been stolen. But there were complaints about ivory and other things, and Phidias presently left town. The whole story is very obscure; he may have been unjustly accused, but there is the story, nevertheless.

Solon could not cancel debts without stories arising about his friends taking advantage of their opportunities, and the great work of Pericles couldn't have been done without stories like this one. Moreover, the great expenditures, of course, led to opposition. His opponents, the conservatives, who were permitted to look at the improvements but had to pay the cost in so far as the revenues of the Confederacy didn't suffice, naturally opposed him, and Pericles twice had to resort to a plebiscite.

That, in Athens, was simple; he just called the people to the general assembly: Greek tyrants did that also. The institution of the popular assembly was deeply rooted; and when Dionysius or many another tyrant had something particularly difficult that he wanted to put across, he would call the people into the assembly for a little fireside talk and tell them what was coming. That is what Pericles did, and I will present a few lines from some remarks attributed to him. Having called the people into the assembly he asked them whether they thought he had spent too much money. The conservatives evidently declared that he had, and he said: "All right then, let it not have been spent on your account, but on mine; and I will make the inscription of dedication in my own name." This recalls the speech that Daniel Webster is said to have made after he had dined and wined not wisely but too well. The United States debt at that time had been practically wiped out, and the country owed only fifty or a hundred thousand dollars. Webster in the course of his address referred to this small debt, and said that it was such a trifle he could pay it himself.

Thus Pericles to his critics. But the fellows who were getting the jobs were present and the matter didn't end there. On the contrary, "they cried out loudly and told him to draw freely from the public funds and spare naught whatsoever." And Plutarch, who preserved the story, tells it without any appreciation of its humor.[2]

Of course I have stated it this way because I wanted to make you laugh, even as I laughed when I read Plutarch's story. You have to go over such stories year after year, and then let current events supply you with modern parallels. Here we have Pericles asking Athenian tax-eaters whether he had been too extravagant; whereupon they cried out loudly, telling him to spend freely and spare nothing whatsoever. How much that is really new can there ever be in alleged innovations which politicians miscall *New* Deals?

When the Confederation of Delos was turned into an Athenian empire, and former allies became subject states which were cruelly exploited, revolts began to occur and finally the great empire was destroyed, so that Athens was left to pay its own bills. Then, of course, the Athenians had to finance with their own resources whatever fine things they might elect to do and enjoy. The result was that public works could never again be carried on as in the age of Pericles, and, what was still worse, the great navy and army were never thereafter maintained at their former strength. The reason was simple. Little things like temples, fleets, and armies could be neglected, but not King Demos, to whose will statesmen had to bow and whose appetite for distributions of public money had become insatiable. So bread and meat and festivals and doles of money had to continue; and, as we shall see, the result was what might have been expected.

The Law Courts

And now I turn to some of the stories which have come down to us about the

[2] Only a few days after I had this material typed and filed away I read an account of meetings which Secretary Wallace caused his agents to hold with farmers in various parts of this country, at which the recipients of agricultural benefits were asked to vote whether they wished to get some more checks the next year. When, strangely, they voted in the affirmative, Wallace promptly issued one of his effusions about this wonderfully democratic method of taking the sense of the people. I leave to you the question, whether the Secretary of Agriculture is a great statesman like Pericles; or whether Pericles, the great statesman, on occasion could be as funny as Henry Wallace.

law courts and what they were doing to the rich. These courts provided wages for six thousand judges, and when the number of citizens, as a result of the Peloponnesian Wars, declined from thirty thousand to twenty, there was no reduction in the number. What the people had actually done was to raise the requirements for citizenship so as to make it very difficult for more people to become citizens and so qualify as judges. They didn't call that unemployment insurance, but that is what it really was.

A court consisted of several hundred judges so as to distribute employment widely and abundantly; there might be four hundred and one or five hundred and one. One of the archons acted as president, but he was not a judge. No orderly legal procedure was provided. Suitors appeared to present their own cases, but could go to the orators and get arguments written for them if they preferred. Later the custom of allowing an advocate to come in and plead for a client was instituted.

In the orations of the Attic orators we have materials which, properly interpreted, give us all we need to know about the procedure in these law courts. The penalties were severe and frequent. Banishment, death, confiscation of goods, all these things were common; these penalties, of course, being directed against the wealthy. There naturally grew up a class of blackmailers, called sycophants, who brought these prosecutions. Under the law the person who preferred charges received a percentage of the fine or the property confiscated, so that one historian has very justly said that at first they confiscated in order to punish but later punished in order to confiscate. These sycophants became a well-recognized class and we read much about them.

Now what an orator will write for a client to present in court, or what a good trial lawyer in our day will say before a jury, may frequently wander pretty far from the facts in the case; but there are some things that no lawyer would say to a jury, because if he said them he would lose his case. No Cambridge lawyer would say, defending a man accused of bootlegging, that such a thing couldn't happen in Middlesex County because everybody knows there never was a case of bootlegging here. There are some things that even an advocate in a trial cannot and will not say. Lysias, for example, arguing against confiscation of a client's property, says: "You know that some of the property is disappearing in the hands of those who are holding it,"—that is, the conservators of the property. Moreover, the rest of the estate, although of great value, "is being sold at a low price." So he tells the judges that the city will profit little by this confiscation, but will be taking property from people who are doing well here, paying taxes and making special contributions, while the sycophants and the people who sell the property will get most of it. That, by the way, is what usually happens with confiscated property. When the French confiscated the property of the congregations, the transaction was going to produce huge sums; but it never has yielded such amounts and never will. That is the history of confiscations.

In another case he argued that it would be disadvantageous to the city to condemn a man, because the city would profit much more by letting him live than by confiscating his estate. And again he remarks that he has to argue a difficult case because the judges have exaggerated ideas as to how wealthy the defendant is; and, besides,

the city is in financial difficulties, with no money in the treasury. Repeatedly Athenian orators say that it is a bad time to argue a case because the treasury is empty.

In another case Lysias shows that a certain man started without any wealth and acquired property in spite of the fact that he paid taxes and performed various public services. He gives in detail his investments, showing that the money went mostly into land and houses and that he could not have left much movable property when he died. Later a suit was brought against a relative and friend of the deceased, who was accused of having sequestered a part of the man's confiscated estate. Lysias's job was to prove that no property had been sequestered, and he argued that, as soon as the man was condemned, his house was placed under guard in order that none of his goods and chattels should be taken out. Moreover, from the sale of his household effects the city had realized a thousand drachmae, which was more than it had received in any previous case. Now a thousand drachmae wasn't much money, but he declared that in cases of confiscation usually no sale of furniture is reported, that house furnishings simply disappear, and that, incidentally, doors are torn out of the houses. Now, you wouldn't say that to a jury in Cambridge. You know that when we collect taxes or other debts here by distraint and sell a man's movables, the doors of his houses do not figure as movables and are not torn out and made away with. No advocate would say such a thing to a jury unless it was true.

I will say nothing about the liturgies, the trierarchies, the choruses. The Athenians had the habit, something like that which survives at New Orleans in the Festival of Mardi Gras, of electing wealthy citizens leaders of choruses in the annual competitions in the drama, music, and dancing. They also, when they had to outfit warships, appointed some wealthy men trierarchs, and allowed them to perform and finance the job. Such things were very expensive, and they had unpleasant consequences which I will presently mention: the general result was that the resources of Athens were squandered. If it hadn't been that much of her trade was in the hands of people who were not citizens and, therefore, although they contributed to the city in regular taxes and made gifts, were not subject to the special attentions of the law courts, the city's wealth might have declined sooner than it did. In time you find, for example, that their property tax, when they levied it, although it was supposed to be levied upon all people, was collected in the first instance from the three hundred wealthiest men in town, who were supposed to collect from all the other people who were subject to taxation but not required to pay directly to the city.

Aristophanes, in his *Wasps*, devotes a whole play to judges of the law courts. The wasps are jurors and they swarm onto the stage in large numbers, dressed as wasps. Each one has a stylus, such as he would write his verdict with, but it is in the form of a dart with a wasp's sting for the point. The whole play turns on the way the jurors "stung" the wealthy people of Athens, and it received the prize for that year. In one of the scenes an old judge is talking with his son who tells him that the total revenues of the city are two thousand talents, and the old man asks how much is paid to the judges. He is told that they get one hundred and fifty talents; whereupon the old judge

gets up angrily and exclaims: "Then it's not a tenth of the revenue that constitutes our wages." And where, he asks, does the rest of the money go; to which the son replies: "It goes to those who say, 'I shall never betray the Athenian populace, but I shall always fight for the people.'"

Turning to another of Aristophanes's plays, *The Knights*, where he satirizes Cleon, he makes a sycophant in court say in his argument to the judges, "No barley meal for you, judges, unless you decide upon condemnation in this case." That was a good joke for a great comedian to put in a comedy submitted in public competition, the play which won the prize for that year, and it is good historical evidence as to what happened in cases involving heavy fines and confiscation of property.

All such evidence is minimized and discounted by the historians who have eulogized or glorified Athenian democracy. There were occasional cases, they admit, in which rich men were unjustly treated; but in fourth-century Athens they tell us that a rich man who paid his taxes and did his part as a good citizen came off fairly well. To the statement of Isocrates that the Athenians have seen fellow citizens stripped of their property while sycophants and blackmailers have become rich; or that the demagogues, while professing to be so devoted to the commonwealth that they cannot attend to their own affairs, have in fact become wealthier than they had ever dreamed of being, while the rich have been impoverished and the city as a whole has become poor—they reply that Isocrates was a disappointed old man who had outlived his usefulness and influence. Sometimes they have got down to cases and have referred to the two characters Zenophon introduces in his *Economics*, Critobulus and Ischomachus, who are represented as men of wealth who had managed to do well enough in democratic Athens. But they do not read the whole of this dialogue, or else do not note that Critobulus is told by Socrates that he isn't really rich, but is poor, because of the large contributions he must make, the strangers he must entertain, the public feasts he must give, and the heavy contributions the city is ever exacting. If in any of these things he fails, Socrates tells him, the Athenians will certainly punish him as if they had caught him robbing the city; so that in fact he really stands in danger of being reduced to poverty or coming to some fate even worse than that. And so far as Ischomachus is concerned, it appears that he is continually being required to equip a warship or provide a chorus, and all this in an abrupt and peremptory way; and it also appears that he has been obliged to practice oratory in order to be able to defend himself in the courts, and that he finds it a public duty to watch the sycophants and note the wrongs they do. So far, however, the sycophants haven't yet "got him," but of course he knows that some day they may be able to do so.

So much for the *Economics;* Zenophon's *Symposium* these liberal historians of course overlook. In this dialogue you will find an interesting account of the conversation at an Athenian banquet where the guests are asked in turn to tell the company what one thing they value more highly than any others. Charmides, a rich man who has been wholly impoverished, when it came his turn, told the banqueters that he valued his poverty above everything else. In explanation, he says that he finds it far better to

feel secure than to live in fear as he used to do when he was rich; to be free rather than a slave; and to be trusted rather than distrusted. When he was rich he had lived in continual fear that his house might be broken into, his money stolen, and his life forfeited on account of his wealth. More than that, he used to be obliged to court the good will of the sycophants and was unable to leave Athens when he desired on account of the public duties he was required to perform, meaning liturgies which obliged him to spend a great deal of money. Now, however, with his property gone and even his household goods sold, he can sleep in peace. He is no longer suspected by the government and no longer threatened by the sycophants. He is free to come and go as he pleases; while men who are still rich now defer to him and give him precedence because, since he is a poor man, he may be supposed to be ready to practice blackmail. As a result he now lives like a king and no longer like a slave. Formerly he was always losing property; but now he has nothing to lose and on the contrary can live in hope of sometime acquiring something—of course, he means, by some New Deal. Finally he remarks: "I formerly paid taxes to the city, but now the city pays taxes to me because it supports me."

Here again the testimony of a story which Zenophon puts into the mouth of a character in a dialogue is worth more than all the labored arguments of liberal historians. Zenophon may or may not have had any actual case in mind; but he was writing a dialogue which he hoped would at least interest his contemporaries, and he would not have inserted this story if he had not known that it was fundamentally true to life and therefore would make Athenians who read it smile, just as we smile today when we hear good losers speaking jocosely about their losses in the famous stock market of 1929, or the things that have happened to their industries and investments since 1933. Zenophon, while a writer of great merit in many ways, was not a man of lively imagination; and he was an intelligent reporter and historian rather than a maker of tales. The story told by Charmides would never have been written if Zenophon had not known it would be recognized as so nearly true to life as to possess the genuine humor which we can recognize in it even seven years after the stock market debâcle of 1929.

Now what was the final result? It was, of course, that public works declined, and that, in the end, the Athenians could not even keep up their fleet and their army. They had in their harbor a large number of triremes, but they couldn't send out more than thirty or forty in proper condition for a battle, and couldn't send these out in time. Their fleets declined, were always too small, generally arrived too late, and usually lost their battles.

Moreover, their people wouldn't fight any more. They preferred to stay at Athens to get the doles and attend the festivals. The situation would be humorous if it were not so tragic; the sovereign citizens of Athens couldn't be invited to go to a play without being paid for it, and the musical and religious festivals took so long that Demos became hungry and had to have a free lunch. It was really a liberal and progressive age. Thus their allies fell away, their fleets declined, their armies were composed chiefly of mercenaries; and the rich, of course, knowing that every war would mean heavy war taxes, were always opposed to war.

The Greek Orators

When Macedonia rose to power, Demosthenes, as you know, undertook in his *Olynthiccs* and *Philippics* to arouse his countrymen to an appreciation of their danger. Now, Demosthenes is often a very poor witness. He was a man who, to carry a point in an assembly or law court, would say anything; but in this case he is trying to arouse his countrymen to avert a great danger. His sincerity cannot be questioned, for his opposition to Macedonia ultimately cost him his life. These orations have a force and a majesty that carry conviction of the sincerity of the man, and compel translators not to write in colloquial English but to give you the orator's periods in true oratorical style, even though no translation can do justice to a great Greek oration.

And what does the orator tell his countrymen? Well, he deplores the fact that Athenian orators in the general assembly make such fine speeches and are considered to have said exactly the right thing, while nothing of the needed action, which alone would make the speeches worthwhile, ever results from them. The Athenians, he says, are doing exactly what Philip would pray that they might do: "You are behind time, and you waste your money; you look around for some one to lead your enterprise and then you quarrel with him," lest perhaps you "blame one another." Never yet, "Athenians, have you instituted or organized a single plan of action properly from the start, but you always follow in the train of every event, and then when you find yourselves too late, you give up the project." Subsequently, when another trouble arises Athenians again work themselves up into a perfect bustle of preparation.

When the question of opposing Philip arises, the orators immediately begin to discourse on what a fine thing peace is and how expensive it is to support a large army, even suggesting that someone is trying to rob the city. Finally he gets around to the struggle between the rich and the poor, and says that Athens is always weakened in time of a crisis because the wealthy complain that the people will not allow their doles to be discontinued when war taxes become necessary. To this topic of reconciling the rich and the poor, in the face of a common danger, he then devotes himself. So far, so good. Here we find what we must accept as an accurate description of the final result of the financial and social policies of Athenian democracy.

And what is the orator's solution? Well, of course, as a member of the popular party and a demagogue or popular leader, Demosthenes cannot conceive of stopping the distributions from the Theoric Fund, even in time of war. The Athenians, he said, ought to banish the idea that any reproach or obloquy attends the receipt of distributions or of free tickets to plays and festivals with free lunches thrown in and even payment for the time required for attendance. Earnestly does he chide the rich for objecting to these distributions, and he tells them that they ought rather "to regard the whole body of citizens as the common parents of the whole state," and never think of depriving the people of anything the state is accustomed to bestow—not even in time of war. Yes, the rich must pay their war taxes; and what should be the contribution of the poor?

The answer of Demosthenes is that the poor ought to "abolish the griev-

ance which makes property owners discontented . . . and gives them just cause for complaint against the government of Athens." The rich have a grievance, but it is not the distributions of public money to the poor or the war taxes they are required to pay; it is, rather, the distribution of their remaining private fortunes through the fines and confiscations of the law courts. The rich have a real grievance when they see either the popular assembly or a court of judges applauding a defendant who speaks well in his own cause, but who, when they come to cast their ballots in secret, cast their votes against him. The wealthy ought to be given security, and ought not to be haunted by fears for their lives and property when in time of danger they are called upon to pay heavy taxes for the defense of the state. And the poor ought to realize that, while the money of the state is common property and may well be shared with them, nevertheless, private property belongs to the possessor. Thus the best he can suggest is continuance of the doles, heavy war taxes for the rich, and that the poor shall make their patriotic contribution by desisting from spoliation of the rich. Indeed in one passage he appears to suggest, though he may not have intended to do so, that it is only when the rich in time of danger are compelled to pay their war taxes, that the poor should give them security for their lives and property.

He also declares that, while Macedonia has been increasing, Athens has declined not only in military power but even in domestic affairs. The parapets were still whitewashed and roads in good repair, while fountains and similar trumpery had been provided; but—observe, he says, the politicians who have controlled the city, some of whom have risen from obscurity to eminence and others from poverty to wealth, while still others have made their own houses more magnificent than the public buildings. As the city has declined, the fortunes of the politicians have increased, while the people have become underlings and hangers-on, content if they receive their share of the meat from the sacrifices and the money that admits them to public spectacles. A people thus made tame and submissive by the demagogues who have become their masters cannot have a high and noble spirit. Even freedom of speech, he declared, is denied them on some subjects.

This is not an anecdote or a play, but the word of a great politician, a successful demagogue, and one of the world's greatest orators, who knew full well the men he was addressing and is earnestly endeavoring, even at the risk of his life, to place before his countrymen a plan which he thinks may save them from a great danger which finally engulfed them. Stories properly interpreted are valuable historical evidence; the play of a great comedian may give you indisputable evidence concerning the political and social life of a people; but the sincere appeal of this consummate orator obliged to tell his countrymen unpleasant truths which he hoped would awaken them to a great danger, gives historical evidence that cannot be gainsaid. The eloquence of Demosthenes failed to arouse the Athenians, but it ought to instruct intelligent students of contemporary economics and politics.

The End of the Road

The end of the road was reached in 323 B. C. when, having learned of the death of Alexander the Great, the Athenians concluded that a good time

had come for a revolt against Macedonian rule. There were still the two parties in Athens: the popular party consisting of those who were not going to pay the war taxes, but were going to continue to receive their doles, though they might possibly be asked during the duration of the war to refrain from spoliation of the rich. Then there were the conservatives led by Phocion, statesman, general, and one of the absolutely honest men in Greek public life—a man withal who had great power of brief, pithy, and deadly statement. He is the man, you may recall, whom Demosthenes called the pruner of his periods, the man who, after the orator had delivered himself of a mighty effort, could arise in his place and in a few words say something that would wreck the best Attic oratory.

In 323 B. C. the popular leaders were all for the war and Phocion as usual was against them. To the general who expected to lead the expedition he said: "Young man, you are like a beautiful cypress tree. You are very beautiful but you produce no fruit." But then they asked him under what conditions he would favor a war, to which he replied: "Whenever I see the young men willing to take their places in the ranks of the army, the rich men disposed to pay the war taxes, and the politicians ready to keep their thievish hands out of the public treasury." Thus Phocion the conservative and Demosthenes the democrat agreed in their final diagnosis of political conditions in Athens.

Nevertheless, the Athenians decided on the war and Leosthenes, the handsome cypress tree, led an expedition intended to inaugurate a general revolt of the Greek states against Macedonian dominion. When the ships and soldiers for the expedition had been assembled, Phocion looked them over and remarked that they seemed sufficient for a short campaign, but inadequate for a long struggle because the city had no reserves of money, of ships, of troops. So it turned out: after an initial success Leosthenes was killed, and then his successor won a single battle; but Macedonian reinforcements continued to arrive and at last the Athenians were overwhelmed exactly as Phocion had foreseen. Presently a Macedonian garrison was placed in Athens and demand was made for the surrender of Demosthenes and other agitators. This was the end of Athenian independence.

Under Macedonian control the democratic constitution of the city was changed and the 12,000 poorest citizens were disfranchised, so that only 9,000 were left and control passed to the conservative or oligarchical party. Under the new constitution the jury courts were pretty well emptied. Many offices were abolished and expensive boards were replaced by single magistrates. A superintendent was appointed to receive and disburse revenues, and financial administration generally was centralized.

With these changes, naturally enough, distributions of surplus revenues to the people disappeared and pay for attending the assemblies, for jury service, and possibly even for holding office was abolished. Thus disappeared the whole system of doles, and Athenian citizens thereafter were expected to support their government and not to be supported by it. Two years later the death of the Macedonian regent was followed by a democratic reaction in Athens, in the course of which the conservative party was overthrown and Phocion was killed. But this lasted less than a year and then the Macedonians set up a new government under the

leadership of Demetrius of Phalerum, the last of the great Attic orators and an administrator of great ability with sound views of finance and general economic policy. Demetrius did not persecute the democratic leaders and restored political tranquility for a time. He abolished the liturgies and transferred to the state the cost of choruses, festivals, and other public functions which had previously been saddled upon the rich. With Athenian independence gone, there was now no need of a great fleet, and public expenditures could be greatly reduced. Within ten years a policy of prudent economy had restored the prosperity, and so the revenues, of Athens to such an extent that some historians have supposed that the city was more prosperous than at any time after the Peloponnesian Wars. When a democratic reaction occurred in 307 B. C. and Demetrius was driven from power, the liturgies were not reëstablished and the city did not revert to the old regime. Conditions simply did not permit the restoration of doles and the other abuses of fifth-century and fourth-century finance. Of course independence was gone, but Athens long remained the center of Hellenic culture, even though in all that concerned the world of politics it must content itself with memories of a great past.

Before he disappeared from the scene Demetrius, upon some fitting occasion, delivered the best of all possible epilogues to the story of the New Deal in ancient Athens. He had not only reduced expenditures and taxes, but also had introduced sumptuary regulations designed to discourage the wealthy from impoverishing themselves. East of the Acropolis a long street led to the theater, and along this, wealthy citizens, victors in the annual artistic and other contests, had erected expensive monuments upon which were placed the bronze tripods given each year to those Athenians whose productions, which cost them so dearly, had been victorious in the annual competitions. The fortunate recipient of a prize, although he had already undergone the heavy outlay of the competition, could do no less than vie with his predecessors in erecting a handsome monument, somewhere along the Street of the Tripods, upon which to place his prize, thus running into further extravagance which many could ill afford. Understanding this all too well, Demetrius, the last of the great orators who had adorned Athens, upon some occasion unknown to us, uttered winged words so true and striking that they could hardly have come from any other Athenian of his time. Such a monument, he declared, was "not a votive offering to victory," but "a libation over a wasted fortune and a cenotaph of a deserted home."

THE THEORY AND PRACTICE OF ADMINISTRATION

BY WALLACE BRETT DONHAM

THE word "Administration" unfortunately has many different subjective connotations or meanings for different readers. The things covered by most of them seem to have little or no value in university training. They are descriptive and give little guide to action. From numerous experiments conducted by the Harvard Business School, however, certain generalizations about the scope of Administration emerge which I believe to be significant. The experiments themselves and the interpretation of their results have been matters of primary intellectual interest to me. This paper was originally prepared in response to a request by members of the Business School Faculty for a statement of my personal views on the scope of Administration. The definition expressed in the following paragraph is the one which I find fertile in relation to a School of Business Administration. It grows out of this experience and interest. I believe it applies equally to other administrative fields.

Definition. Administration is the determination and execution of policies involving action. Such policies must be conceived by men. Such action must be effected by human organizations.

Determination of Policies

In the first stage, the *determination of policies*, good Administration involves consideration and weighing of both current facts and past experience in efforts to apply foresight where foresight is possible. Foresight can be based only on past experience, and yet in a changing world each situation is new. Foresight will therefore break down frequently from chance, from changed conditions, from lack of knowledge or understanding, or from limitations on human intellect which make it impossible to cope effectively with a particular complex situation. When foresight fails, the good administrator will have done and will do his best to preserve freedom of action and to move in other directions. This is analogous to the military necessity of keeping open lines of retreat. In this way only can the administrator or the general be in a position to reformulate policies flexibly when he is called upon to deal with the unexpected. In most cases when foresight breaks down from chance or lack of knowledge, the specific breakdown is caused by some combination of circumstances which was quite beyond detailed prediction. Nevertheless the skillful administrator should in most cases foresee in general terms the possibilities which may occur, and this foresight should be specific enough to guard against the worst effects of the specific happening. The problem of guarding against such contingencies involves constant attention to margins of safety. Depressions are of this nature.

Sound administrative policies must embrace both the long-run and the short-run view. They always seek to transcend mere expediency, for otherwise they will too frequently create more serious problems than those they solve. The difficult logical and practical problems involved in questions of foresight, adjustment, and flexibility, are of vital importance in the determination of administrative policies.

In many, if not most, cases, subordinates must participate in the formulation of policies. It is too often overlooked that all members of an organization, save those doing purely repetitive routine work, are concerned with the formulation of either primary or secondary policies. Therefore they need a competent understanding of Administration.

Execution of Policies

In the second stage, the *execution of policies*, good Administration involves (1) leadership, and (2) organization apt for the tasks in hand. These require selection and training of men so that they fit according to their capacities and responsibilities into the needs of a specific organization. The qualities of leaders are difficult to define but leaders are easy to recognize. Execution involves also (3) keeping records which make readily available facts pertinent to necessary decisions. For such reasons we need not only accountants and statisticians but a vast improvement in administrative records other than accounts and statistics; moreover, execution requires (4) action carefully timed in relation both to determined objectives and to conditions of operation in the organization through which action must be taken. Many of the failures of the New Deal go back to a complete lack of understanding of the feasible limits within which a given organization can function. Compare, for instance, the administrative chaos of NRA with the relative effectiveness of established farm agencies administering AAA. And execution of policies requires (5) methods of supervision to assure not only that decisions shall be properly, punctually, and efficiently carried out, but that policies shall be constantly reappraised. This, too, is generally overlooked.

Administrative policies must be endlessly modified both in detail and in principle, in the light of experience, of newly discovered facts, and of changed conditions. Nevertheless such modifications should be made thoughtfully, and not simply for the sake of change. The two stages, *determination* and *execution of policies*, are never long separate. Thought and action must constantly and imaginatively react on one another.

Human Aspects of Administration

In both determination and execution of policies, accurate knowledge and constant habitual awareness of the human aspects of organization are exceedingly important, and almost universally ignored. Worse than this, action is far too generally based on assumptions as to human behavior inherited from the past and used wholly uncritically. Neither organization charts nor reasoned conclusions which leave human nature out of account can be relied upon to give satisfactory administrative results. Yet we install new machines or embark on social experiments like the TVA without considering human desires. There is constant need for diplomacy and skill in handling men. Good Administration must always consider known and discoverable characteristics of the behavior of men, both individually and in groups. It must recognize the extent to which human beings act on sentiment or prejudice rather than reason, and the importance of human routines, habits, customs, loyalties, and traditions. It rarely does these things.

Many engaged in practicing and teaching Administration hold that young men cannot be trained to deal

with human problems such as these outlined. While this view is widely held, I believe it contrary to the facts. It is certainly untrue in training for private business administration. In that field much has already been done, and much more can be done than is now being accomplished. No doubt training in some aspects of human behavior will turn out to be impossible. The general opinion, however, that little or nothing can be accomplished results from the neglect of human problems in current educational practice and the tendency, in both business and universities, to depend overmuch on technical logics. A new machine is installed after an engineering study. Rarely do we consider the effect of this new machine on the underlying undefined and generally unsuspected social organization of the group of workers who are affected by it. This overemphasis aggravates human problems while doing nothing to solve them. When the principal factors are ignored, success where it occurs is based on accident or intuition. This accounts for the fact that the technical methods of successful managers of labor usually fail in the hands of imitators. Experience shows that when these human factors are taken into account consciously, even with our limited present understanding, substantial improvement is possible. When they are better known, more success will be achieved. This statement is an inference from wide personal experience.

The Concept of Action

In determining and executing policy, the immediate concrete situation must be clearly before the mind. In this respect administration is no different from clinical medicine. The concept, *action adapted to the immediate concrete situation*, takes first place in the theory of administration. This, too, is an induction from experience, which has the same foundation as other inductive generalizations like the fundamental laws of physics. Without it, the whole notion of Administration becomes sterile and the training of administrators impossible. Nevertheless in many, if not most, cases the specific problem can be understood and interpreted, and foresight with reference to it can be defined and skillfully utilized, only if constant attention is paid to the great underlying forces which are constantly changing. The concept of action adapted to all the known facts presents perhaps the most important basis on which we may implement and make effective the efforts of men in and out of our universities to maintain a moving social equilibrium in the midst of incessant change. It is utterly opposed to the concept of setting up Utopias which, because they ignore the current reality, are wholly unattainable. A host of administrative problems are, of course, of a lesser order where quick decision and action of any intelligent nature is required. A traffic jam is of this order. The concept of intelligent and quick action is the one requirement.

Some Relations of Administration to Other Sciences

Subdivision of the social sciences in our universities has been growing steadily. With increasing complexity this is essential, but it is artificial. Each subdivision necessarily selects certain facts for inclusion within its special field. Each by abstracting from the whole pattern excludes many other facts and forces present in the complex reality of the world of affairs. Economics alone will rarely settle a political science problem, or political science alone an economic problem, for they never talk from the

same premises. It is essential to each specialized science that it select its own abstractions; but the selections of other social sciences are arbitrary for the purposes of the administrator. They do not release him from considering and weighing the whole situation in determining his policy and action. Except by accident, therefore, the facts considered by a single department of social science are never by themselves the basis for administrative decisions.

Moreover, the conclusions of the specialist in a particular social science, whether it be economics or some other social science, drawn from the abstractions of his field, are unsafe for the administrator to use in conjunction with similar conclusions in other social sciences. Within the field of the physical sciences there is an appropriate sense in which the term "applied science" can be used, and the conclusions of such an applied science are useful to the administrator. When one leaves the physical sciences and moves into the subdivided areas of the social sciences, this concept of "applied science," so useful in the other field, must be used with the greatest care. It is in general grossly misleading. The moment an administrator tries to "apply" economics to the realm of action, he must of necessity bring under consideration many noneconomic facts. This changes the problem greatly, for these noneconomic facts and forces may, and frequently do, modify or contradict conclusions pointed to by the economic facts. When Economics says "X" and Political Science says "Not X" no simple compromise based on these two conclusions alone is possible. Nor can human behavior be bound within the confines of either science. The administrator is forced to a reappraisal of the whole situation.

This is not to say that the specialized social sciences are useless to the man who must act. Quite the contrary. This view rather looks toward defining the contributions of the social sciences in ways that will not only encourage their use but minimize their misuse by administrators, public and private. We shall make progress toward an integration of the sciences useful to men of affairs only as we recognize these facts. To the well-trained administrator who grasps his logical and human problems, the specialized social sciences will often be controlling guides in the selection and weighing of facts and forces which should determine his action. Too often, however, through failure to understand the logical nature of his own problems, the administrator accepts the abstractions or conclusions of the specialist without examination of other forces and without reëxamining premises. When this happens he frequently makes shocking errors of policy. Then he concludes that these sciences, which should be of great value to him, are wholly unreal and useless.

In my judgment the failure of the social sciences to exert more effective influence in the world of affairs, and their even more serious failure when attempts are made to apply them in the solution of social problems, finds its root here. The specialist has not made his self-selected and self-defined limitations clear to the man of action. Often in his detachment from reality he is himself unconscious of these limitations. The administrator does not understand that specialized conclusions are and must be based on abstractions and that the abstractions made by other social scientists are made for their own purposes and not for his. Nor is it clear to him that speculative thinking where it is unrelated to action

can be only indirectly rather than directly valuable in solving administrative problems. As a result of this confusion the administrator trained *ad hoc* in the world of practical experience almost never understands the aids available to him from the work of social scientists, and the social scientist is puzzled when such men fail to accept his conclusions as the basis for action. These distinctions have too little attention in our universities. The limitations imposed by the abstractions of other specialized social sciences are to the administrator arbitrary limits which he cannot accept. These facts account in large measure for the failure of our social sciences to influence the behavior of experienced men of affairs and for the disturbing results which so frequently follow when academic social scientists attempt to apply their theories in the actual world.

I repeat that this process (abstract analysis of and abstract theorizing about part of the pattern of things) is of real value as an aid in the selection and evaluation of facts and forces pertinent to administrative problems. Indeed, it is essential. But in order to use these values wisely in determining and executing policies the Administrator must understand both the services offered by, and the limitations upon, experts and specialists trained in fields which illuminate parts of his problem and should, therefore, affect but not necessarily control his decisions and action. In just this measure the experienced clinician utilizes the reports of the bacteriologist, the chemist, and the radiologist, who well know that they are themselves incompetent to prescribe treatment. As one of my colleagues has pointed out, the clinical physician has always dealt with cases, and medical research and theory has always been tempered by his needs. In the social sciences, on the other hand, there has been a serious gap, except where administration is involved, between the theorist and the man who must act. As a result our social science theory continues to be detached from reality. There is great need for a new social science, namely, the Science of Administration, where social theory and action must meet.

Administration Is Itself a Social Science

Administration as conceived in this paper is, therefore, a social science with its own specialized logics, its own techniques, its own abstractions clustering around the concept of action through human organizations, and its own problems of theory. It is vitally concerned in integrating other sciences, physical, biological, psychological, and social, at the point where action is involved. In practice it is comparable with the practice of medicine. Skill and wisdom in handling men and things in action is not easily acquired. As a theoretical science, Administration in its complexity is comparable with the complexity of other social sciences. Its social importance is great. Indeed, if our civilization breaks down, it will be mainly a breakdown of administration, both private and public, for both private and public administrators constantly make decisions and act in situations of the widest significance. Too often before they act they examine only some narrow and highly specialized segment of the concrete situation, and as a result create more serious troubles than those they cure.

Professional Aspects of Administration

Administration must become a profession and assume its responsibilities. The principal characteristics of a pro-

fession are (1) the recognition of an intellectual unity based on a relevant body of experience, fact, and theory; (2) the acceptance of responsibility by each member of the group to the group as a whole, which transcends responsibility for mere money making and subordinates the individual's profits, or success in the usual sense of the word; and (3) the development of special standards and concepts of proper conduct growing out of the relation of the group to the society of which it is a part. In many important administrative fields, both public and private, the multifarious nature of the subject matter with which administrators must deal, and the necessity of technical specialization in handling many aspects of this subject matter, have obscured this corporate relation. To the great loss of society this has slowed down recognition of the responsibility of these groups to society as a whole. It is the duty of a university school to hasten the development of such concepts and to form a professional spirit among its students.

Training for Administration

There are many special fields of Administration; for example, private business administration, social security administration, and indeed public administration in any of its phases. Nevertheless, certain general statements can be made about training for Administration which apply to all fields. Training for Administration will not supply administrative capacity to men who lack the basic quality to handle administrative problems. Similar limitations, however, apply to all university training. The justification for administrative training is that training can develop this capacity where the native quality exists, as well as give the necessary background. Fine capacities are often dormant. If well done, administrative training will do these things more surely and more rapidly than the results can be accomplished through unorganized experience. At its best it supplies a theoretical understanding rarely if ever attained through practical experience, for practical experience is in the nature of things disorderly. Because it is more systematic it prepares men for growth in responsibility. These statements have the same type of basis in experience which justifies medical and legal training.

The objectives of administrative training may be stated in general terms. Every one of the statements applies to Business Administration, and can be illustrated out of business experience.

1. *The student needs to acquire a factual content appropriate to his special field.* This is of prime importance, but in view of time limits and of the need for an underlying grasp of the diverse aspects of specific problems acquisition so far as possible should be an incident to intellectual processes. Administration never exists in a vacuum. Action is always related to concrete situations. These must be seen in their relationships. General concepts about Administration mean practically nothing, even to students of high quality, until each orients himself in some specific area of human activity. From the beginning, therefore, the student of Administration should seek an intimate factual knowledge of his field and of the kinds of questions which arise within it.

2. *Human behavior individually and in groups should, as soon as may be, become a major subject for instruction.* This, too, I rate as of prime importance. It is not now given the attention it not only deserves but requires. Whatever

the chosen area of action, the general characteristics of Administration, the necessity of dealing through human organizations with men and things in action, will hold good. Much emphasis on human aspects of Administration is essential. Unless major attention is paid both to instruction and to research concerned with the behavior of men, there is inevitable overemphasis on dehumanized facts and logics, and constant risk of ignoring the most important factors in particular situations. Human problems, always present, often have greater weight than economic, engineering, or other data. One essential foundation of training for administration is human biology in its broadest sense.

3. *Coördination of social science material becomes necessary when administrative decisions involving action must be made.* The problem presented is not simple, but if social sciences are to exert the influence they should it must be solved. Facts pertinent to specific problems involving action and, therefore, to administrative decisions in any field will in most cases cut across the recognized subdivisions of human knowledge as taught in our universities. The Administrator must select from the mass of material the most significant facts and forces. This selection must be made without regard to the special social science field in which any particular fact is usually classified. The work of the specialist, whether he is an economist, a political scientist, or perhaps an anthropologist, will of course aid vitally in selecting and weighing facts. Nevertheless, his abstractions considered alone will rarely settle concrete problems involving action. This characteristic of Administration presents important questions concerning the logical relationship of Administration to other social sciences. Anthropology may bear as directly as economics on a problem in labor relations, and yet its premises alone will settle nothing. Political considerations may compel unsound economic action, or even make policies which are "unsound" from an economic viewpoint, the best available social policy. When two specialized social theories or conclusions are in conflict, conclusions useful as the basis of action can rarely or never be reached by simple compromises between the two theories. Reappraisal and reselection of premises are essential.

The teacher of Administration must keep these facts constantly in mind. The difficulties faced by the student in seeking an understanding of the proper use of specialized social sciences in solving administrative problems are great. Training should start as soon as the student has a fair working knowledge of facts in his special field. Economics and Government of course require special attention. Nevertheless some method must be devised of giving introductory training in a variety of social sciences. The objective should be a realization of the conditions which determine how social sciences may contribute to administrative understanding, and why each alone is so frequently sterile for administrative purposes. Since no administrator can in the nature of things be expert in all pertinent social sciences, the student must be made aware of the service available from highly trained specialists in social science fields. Specifically, students need training in the use of experts and protection against abuses by them. These problems present real difficulties and the student's time is limited. There is real danger of disqualifying men for action through overprolonged training.

4. The student should be so directed that he develops *the habit of seeking administrative relationships and theoretical implications of the facts* he studies. In the early days of training, simple relationships only can be grasped, but even these early minor generalizations should be at the administrative level, and should involve action. The student's lack of practice in seeking and apprehending relationships and the limited range of facts at his command will for some time justify only minor decisions. As his experience builds up, more and more complex relationships can be studied, until the individual student reaches the limit of his capacity to generalize in terms of action. He must get this training in life if he misses it in school.

5. *Time perspective is essential.* Much of our instruction is shallow in time. It is typically desirable to look not merely narrowly but broadly and with time perspective at current situations. In so far as possible the student should seek to understand and utilize past experience. Before he can do this effectively, however, much history must be written or rewritten in terms bearing on administrative problems. In a field like business, for example, only a beginning has been made in writing such history. Also, in view of pressure on time, there is a real problem in determining methods by which this historic perspective can be most effectively presented. One detached elective course unsupported by other instruction can hardly accomplish a satisfactory result.

6. *The concept of action related to all the known facts must be constantly in the forefront.* The habit of thinking things through and acting is not easily acquired. Prolonged practice under guidance is as necessary here as it is in clinical medicine. Even where didactic instruction or the literature of a special field is needed by the student as background for his decision, there is real danger that he will lose interest in subject matter and consequently much of the value of such training unless from the start he understands the relationship of his instruction to action. Speculative thinking, unless it is clearly related to action, is dangerous to the student of Administration for it works against the habit of decision and action. A university can all too easily destroy capacity for action. Yet many administrative situations need only some sensible decision applied at once. Inaction often leads to hopeless confusion. Capacity for action must be developed and preserved.

7. *The professional aspects of Administration should be stressed constantly.* This cannot be done by preaching. It requires a constant attitude of mind on the part of the teacher and a real recognition of the intellectual difficulties and dilemmas presented to the profession by the need of action. Sentimentalism will not serve.

Summary

The principal tasks of both student and school can be summarized briefly:

1. The acquisition of a pertinent content of facts in the chosen administrative field.

2. A grasp of human behavior individually and in groups.

3. An understanding of the values offered in a variety of social sciences and their logical relationship to Administration. This involves the use of experts and a grasp of their limitations.

4. The habit of seeking administrative generalizations.

5. Time perspective.

6. Training for decision and action related to the immediate concrete situation.

7. Professional aspects of business.

To accomplish all these results even measurably, a Faculty of Administration should include a considerable variety of men in its membership. For such reasons there are on the Faculty of the Harvard Business School men trained in economics; in government and political science; in psychology and psychiatry; a social anthropologist; economic and business historians; professors of law; engineers; men trained academically in business; and men of wide practical experience in business, law, and government. In its research it is closely allied with biochemists and medical men from other departments of the University who are studying, in a laboratory located at the School, organic problems affecting human beings not only as they work in industry but as they behave individually and in groups in other parts of their day-to-day life. Simultaneous studies by members of its own Faculty are being carried on relating to the social and psychological reactions of individuals and groups, and to the sociological and anthropological aspects of society. For such reasons, too, the position of this Faculty in the midst of a great university with well-organized departments in all the social sciences, including Economics, History, Government, Sociology, Social Anthropology, and Law, is of the first importance in making possible the attainment of our objectives. It is essential that close contacts with these social sciences be maintained. These objectives are unattainable outside a university, for they would involve organizing a university on top of a faculty of business administration.

COMPANY ANNUITY PLANS AND THE FEDERAL OLD AGE BENEFIT PLAN

BY M. B. FOLSOM

ACCORDING to the best estimates there are now approximately 7,500,000 men and women over sixty-five years of age in the United States. The number of old people in the population has been steadily increasing and will undoubtedly continue to increase for many years to come. Actuaries estimate that the number of people over sixty-five years of age by 1950 will be almost 11,000,000 and by 1970, 15,000,000. The percentage of the population over sixty-five years of age is also expected to increase. Six per cent of the entire population is now over sixty-five years, and by 1970 it is predicted this percentage will increase to ten.

There are a number of reasons for this tendency; among them are lower mortality during earlier years and the restriction of immigration, with a sharp reduction in the number of younger people entering the country. We are becoming an older country and will gradually approach a stabilized population.

The depression has brought to the fore the old age problem. It is estimated that approximately a million men and women over sixty-five years of age are now dependent upon the public for support. A much larger number are dependent upon their own families for support. During the depression, however, it has become more and more difficult for children to take care of the aged. A number of the middle-aged people have lost their savings and it is difficult for many of them to make up this loss before their retirement age. The difficulty of the older worker in industry has been greatly exaggerated, as surveys have indicated that the percentage of layoffs among older workers is much lower than among younger workers. It is true, nevertheless, that when an older worker loses employment it is difficult for him to find reëmployment. It must be expected that many of the older groups now among the unemployed will find it difficult to get jobs, even when normal business conditions return.

It would seem, therefore, that this country is now facing, as practically all other countries in the world have faced, the pension problem. Before the enactment of the Social Security legislation by Congress in 1935, steps had been taken in this country in two directions toward meeting this problem: first, the adoption by individual companies of voluntary retirement plans; secondly, the adoption by states of old age assistance plans.

Company Annuity Plans

M. W. Latimer in his book, *Industrial Pension Systems in the United States and Canada*,[1] presents the most exhaustive study that has been made of industrial pension systems in this country. He lists, as of May, 1932, 434 companies, having a normal employment of 3,720,000, which have adopted some type of company pension plan. There are also plans of educational, charitable, and financial institutions which were not included in his study. There is great variety in the types of plans,

[1] New York: Industrial Relations Counselors, Inc., 1932.

varying all the way from the informal plan with no provision for financing it to the insured plan with the liability adequately financed.

Many of these plans are on an unsound financial basis. In some cases it has been necessary to curtail pensions, and some plans have been discontinued entirely. The companies with a pension plan, but with no arrangements for financing the cost, are finding that payments to pensioners gradually assume a larger percentage of their pay rolls; the cost may some day become prohibitive. Many companies which adopted pension plans years ago are now faced with the problem of how to meet the increasing payments. In the last few years there has been a decided tendency toward putting company pension plans on a sound financial basis. A very large percentage of the companies which have inaugurated plans recently have adopted the group annuity type underwritten by an insurance company.

The company which has been in existence for a number of years with workers approaching retirement age, and has not set aside reserves in the past to provide pensions for these workers, now has an accrued liability. It is this item of accrued liability which prevents many companies from inaugurating pension plans. Few companies are able to pay this accrued liability in one lump sum. Many companies have met the problem by spreading its cost over a period of years.

If the plan is to be kept on a sound basis, it will also be necessary that the company set aside an amount each year to take care of the liability accruing for that year. Most of the plans recently adopted provide for employee contributions toward the cost of this current liability. Employee contributions are very desirable, not only because they assist in financing the plan but also because the employees become more interested.

There are a number of reasons why employers have found it good business to adopt pension plans. Many of the older employees reach retirement age without sufficient means for support. If an employee has had a long service record, the employer naturally hesitates to discharge him, and will probably keep him on the force after he has passed the period of usefulness. As a result there is a pension cost which is not recognized as such, but is buried among the other costs. It is better business to retire such a person and replace him with a younger and more efficient employee. An adequate pension plan also has a stimulating effect on the whole organization. Employers all feel that, up to the age of declining strength, long-time service on the part of many employees is a business asset. Organizations which take care of their older people appeal to the worker. It also adds to the reputation of the employer in the community and attracts more satisfactory employees. It has been the experience of many companies that the cost of a pension plan is a good business investment.

The question naturally arises as to whether individual company plans could be adopted on a wide enough scale so that it would not be necessary for the government to enter into this field. Such an extension would be the ideal plan, but for a number of reasons it could not be realized. It is estimated that the Social Security Act will actually cover 25,000,000 workers exclusive of railroad workers, and the coverage of industrial pension plans is now probably less than 15% of the total. Unless steps are taken to put the present individual company plans on a sound basis, the employees in many of them cannot

look forward with certainty that the pensions will be paid. Many of these companies are not now in a position to finance the increased costs or to put up the amount of reserve which should have been accumulated over a number of years. There has been an increased number of pension plans during the last two or three years, but even if this continued it would fall far short of reaching a sufficient percentage of the total industrial population. Neither could it be expected that many companies in highly competitive fields and not in strong financial condition would be able to adopt pension plans. Another factor is that most private pension plans require service qualifications before employees are eligible to retire. In recent years this service qualification has been decreased, and new plans require only a short service qualification. It would be many years, however, before such practice would become general.

To give wide protection, it is clear that a governmental plan must be adopted. As will be explained below, a governmental plan should provide only minimum benefits, and many individual companies will find it desirable to adopt supplementary plans providing additional benefits to solve their own retirement problems satisfactorily.

State Old Age Assistance Plans

Before the inauguration of the Social Security Act, twenty-nine states had already adopted old age assistance plans. These plans give a stated amount to the aged who have no means of livelihood. They are generally on a case-work basis, and the amount of the pension varies with the need of the individual. The age limit has generally been seventy and the average grant has been less than $20 per month. These plans have been established to take the place of the poorhouse.

One section of the Social Security Act provides that the Federal Government will meet half the cost of the old age pensions granted under the state plans, with a maximum cost to the Federal Government of fifteen dollars a month. It provides that state plans must within five years have an age limit of not over sixty-five years, and no doubt most states will reduce their age limit. Twenty-eight states have already qualified for the grant under this section of the act. We shall thus soon have a system established throughout the country under which persons who are now sixty-five and in need will be able to receive from the state a definite pension, the amount depending upon their own needs.

While this system is a less expensive and a more humane method of taking care of the aged than the poorhouse system and is better than a relief system, it would be a serious mistake if this country depended solely upon it to take care of the old age problem.

The cost of this plan to the government will increase at a very rapid rate. A larger number of older people will be reaching the age of sixty-five each year, and for a long time more pensioners will be added to the rolls each year than are taken off. The cost will not become stabilized until the number of pensioners who die will equal the number of those who will be added. Another factor is that the experience in foreign countries indicates that a very high percentage of the people over sixty-five will qualify for the pension; the proportion in some countries reaching as high as 75% or 80%. The actuaries have estimated that based upon the assumption that 50% of the older people will qualify for assistance, the cost of the

old age pension plan within the present limits of $30 per month would be $2,000,000,000 a year by 1960 and in 1980 would be $2,650,000,000 a year—with half the cost to be borne by the states and half by the Federal Government.

It would also be bad in principle to have a system under which we tell those who do not save that they will be provided for by the state, and those who have saved for their old age will receive nothing and will also be taxed to provide pensions for the others.

It was to avoid these results that the Social Security Act provided for the establishment of a governmental plan, to which employees and employers would both contribute, so that an old age benefit could be provided for the employees in their old age without their being dependent upon the government for support.

Federal Old Age Benefit Plan

The old age benefit plan set up under the Social Security Act becomes effective January 1, 1937. It covers all employed persons with the exception of employees of railroads, of charitable organizations, of the government, farm laborers, and domestic servants. It is estimated that twenty-five million people will be covered. The tax rate is as follows: the years 1937–1939, 1% of the first $3,000 of salaries, by the employer and employee;

1940–42, 1½% by each;
1943–45, 2% by each;
1946–48, 2½% by each;
1949 and thereafter, 3% by each.

No annuities will be paid prior to 1942. Persons reaching the age of sixty-five and retiring during or after 1942 will receive monthly benefits, the amount depending upon their salary during the period in which they made contributions.

The formula for monthly benefits is one-half of one per cent on the first $3,000, plus one-twelfth of one per cent of wages in excess of $3,000 and less than $45,000; 1/24 of one per cent where the wages are in excess of $45,000. Put upon an annual basis, the plan provides in effect an annual benefit of $150 plus one per cent of the first $45,000 of salary received during a worker's lifetime, and one-half per cent of the salary over $45,000.

The formula is weighted so that the employee with lower wages will obtain higher benefits in proportion to his contribution than those in the upper wage groups. It is also weighted so that those who retire during the first few years of the plan will receive higher benefits in proportion to their contribution than those who retire many years in the future. Table I indicates the benefits

TABLE I
ILLUSTRATIVE MONTHLY BENEFITS

Average Monthly Salary	*Years of Employment*			
	10	*20*	*30*	*40*
$ 50	$17.50	$22.50	$27.50	$32.50
100	22.50	32.50	42.50	51.25
150	27.50	42.50	53.75	61.25
200	32.50	51.25	61.25	71.25
250	37.50	56.25	68.75	81.25

received for the different salary groups and for the years of employment. It is evident from this table that an employee receiving a salary of $200 a month will receive when he retires twenty years from now $51.25 a month, as compared with $32.50 for the employee with a salary of $100 per month with the same employment.

The benefits received by the person who retires during the early years of the plan are considerably in excess of the amount of benefits which could be purchased for the same amount of money from an insurance company. In effect,

the cost of providing these excess benefits to the older workers will be met in the future, when the full rates become effective, by the younger workers and the employers paying more than they would have to pay to obtain equal benefits from an insurance company. Since, however, the employer pays half the cost, in no case will the employee receive benefits less than his own contribution would buy from an insurance company.

Effects of Federal Annuity Plan upon Company Plans

From Table I it should be evident that the Federal old age benefit plan alone will not meet the pension problem of industrial companies. In the first place, no credit is given for service prior to 1937, and no benefits can be paid to persons who retire prior to 1942. Those who retire early in the plan will receive comparatively small annuities, quite a little less than they would receive under the usual company plan. It will be many years before a person would receive as much annuity under the Federal plan as he would receive under the usual company plan.

Table II gives the comparison between the benefits under the Federal old age plan and a company plan. In this illustration it is assumed that the plan was adopted in 1928 and provides for one per cent of salary for each year of service prior to January 1, 1929, and two per cent for each year of service after January 1, 1929.

TABLE II

BENEFITS UNDER FEDERAL OLD AGE PLAN COMPARED WITH A COMPANY PLAN

Age, 1937	*Years of Employment Prior to Jan. 1, 1937*	*Average Monthly Salary*	*Benefits under Co. Plan*	*Benefits under Gov't Plan*
55	25	$150	$ 79.50	$27.50
60	25	100	43.00	17.50
45	10	200	116.00	51.25
40	5	150	90.00	50.00
35	5	250	175.00	68.75

Most companies with pension plans will find it necessary to supplement the governmental annuities if the same pensions are to be provided as in the past and if the plan is to accomplish its purpose. This is especially true in the case of companies which already have a number of older persons on their pay rolls or a considerable proportion of workers in the higher wage group, or in the salary group over $3,000. On the other hand, if a young company has a large proportion of younger employees in the lower wage groups, the governmental plan would go a long way toward meeting the problem, except for the employees whose salaries are over $3,000.

The Federal act should be of assistance to companies which have not yet established pension plans because the benefits which would be paid to the present older workers are greater than could be obtained for the same contribution made to an insurance company. Thus, the governmental plan will assist a company in meeting its accrued liability. The fact that the governmental plan is on a contributory basis with employees paying half the cost should make it easier for companies to adopt this type of plan. Companies with pension plans which are not on a sound actuarial basis should find that they are in a better position to put their plan on a sound basis. Companies with plans which do not provide adequate pensions might find it advisable to continue their present pensions in addition to the governmental plan.

The Adjustment of Company Plans to the Federal Plan

The Eastman Kodak Company has had experience in several foreign coun-

tries in operating a company pension plan as a supplement to a governmental plan. The method adopted depends upon the type of governmental plan. In England, for instance, when the company annuity plan was inaugurated, the governmental plan was disregarded entirely because the benefits were quite low. On the other hand, in certain South American countries, such as Brazil and Uruguay, the governmental plan provided for such large contributions from both workers and employers that it was necessary for the company to abandon its pension plan which had been in operation in these countries for several years.

In France the governmental plan is more nearly comparable to the plan set up under the Social Security Act, and the experience of the Eastman Kodak Company there is of interest in considering the adjustments to be made in the company plans in this country.

The Kodak plan has been operated as a supplement to the governmental plan for several years and it has worked out quite satisfactorily. Under the governmental plan, employees earning less than 25,000 francs, or about $1,600, are eligible. A basic wage is set up which is an annual wage of a maximum of 10,800 francs, or $720. Both the employer and the employee contribute 4½% of the basic wage. The normal retirement age is sixty. Because the benefits were based on this basic wage the annuities to be paid were in many cases not as large as under the company plan, and also because many workers were excluded entirely from the governmental plan, the company found it necessary to supplement the governmental plan. Otherwise, the pension program of the company would not have been adequate and the company would not have been able to retire all types of workers after they had passed their period of usefulness.

The company had previously had a plan in operation which provided an annuity of one per cent of salary for each year of past service and two per cent for each year of future service. When the governmental plan became effective, the company changed its plan so that an employee would receive from the insurance company which had underwritten it an annuity of two per cent of his salary, less a specified percentage of the basic salary as required by the law. The result was that the total payments to the insurance company and the government were practically the same as they had been before. The employee's contribution was also reduced, with the result that his total contributions were about the same as they had been previously.

The company has decided to adopt the same policy in this country. The Kodak Retirement Annuity Plan was underwritten by the Metropolitan Life Insurance Company with whom a group contract was made in 1929. In addition to making a substantial payment for the accrued liability at the inauguration of the plan, the company has been making payments each year for the current liability. The payments which are thus being made currently to the insurance company are in excess of the initial payments which will be required under the pension provisions of the Social Security Act. This excess is due to the fact that the benefits payable under the company plan are higher than the benefits which will be paid under the Social Security Act for a number of years, and also because the Social Security plan is limited to the first $3,000 salary. When the full 3% rate becomes effective under the governmental plan, the difference between

the present rates on the first $3,000 salary and the government rates will not be so great.

The modifications to be made in the company plan on January 1, 1937, due to the enactment of the Social Security Act, will have no effect upon money which has already been paid to the insurance company or upon the annuities which have already been earned by employees for service prior to January 1, 1937. Thereafter the annual payments to the insurance company will be reduced, because smaller annuities will be provided under the company plan for service after January 1, 1937, due to the old age benefits resulting from the tax payments the company will make to the Federal government. The objective will be to have the sum of the annuities provided by the company's payments to the government and to the insurance company provide a combined annuity practically the same as under the present company annuity plan. The total cost in the long run should be approximately the same as it would have been under our present plan. During the first few years the combined cost will be somewhat lower because the benefits payable to those who retire in the next few years will be greater than could be purchased for the same payments to the insurance company. This advantage is later offset by the higher cost of the benefits purchased fifteen or twenty years from now.

The plan will be arranged so that the part of the annuity which may be considered as accumulating in the government plan for the present employee from his own contributions will be added to the annuity which he would have accumulated under the company plan. The new employee will accumulate an annuity of two per cent for each year of service, with the employee paying part of the cost, as provided under the Social Security Act, and the company paying the balance. For new employees a two per cent annuity is adequate—the older employees of the present force received only one per cent annuity for their service prior to 1929.

The exact formula to be used in making the necessary adjustments in the plan for the present employees when the governmental plan becomes effective has not been determined. The method the company will probably use for new employees is to have the company plan provide benefits equal to one per cent of the annual salary of workers earning less than $3,000, and for those receiving over $3,000, one per cent of the annual salary up to $3,000 and two per cent of the salary in excess of $3,000. The exact formula to be used for adjusting a company plan to the Federal legislation depends entirely on the details of the plan, and no general rule will apply in all cases. An adjustment to provide exactly the same costs and benefits usually cannot be made because the formula adopted by the government is of a different type from that generally used in company plans.

Adjustments could be made in two ways. As an illustration, assume that the plan is contributory with the employee and the employer each paying, say, four per cent and the annuity one per cent of salary for each year of past service and two per cent for current and future service. It could be arranged so that the combined annuities to be provided will be exactly the same as in the past and so that the contributions to the insurance company will be decreased by the amount of the contributions to the governmental plan, for the first $3,000 of salary. For salaries in excess of $3,000 the present rates would

continue. No change would be made in the annuities based upon service prior to January 1, 1937. It would be found in most cases that, as indicated above, the benefits to be provided from the Federal plan for a number of years would be greater than could be obtained for the same contribution to an insurance company, and this saving to the company could be applied to reduce the accrued liability. Very few companies have found it practical to finance the accrued liability completely.

The second method of adjustment would be to have the combined contributions to the government and the insurance company exactly the same as they have been, with the benefits varying in accordance with what the contributions would purchase. This would have the disadvantage of having varying rates of benefits. In most cases, the former method would be preferable.

Adjustments will have to be made for women when, as is often the case, the private plan provides for their retirement at the age of sixty instead of sixty-five as under the Federal plan. Temporary annuities could be purchased to run from sixty to sixty-five.

It is evident that it is feasible to operate without difficulty a company annuity plan as a supplement to the governmental plan, once the adjustments have been made. This has been the experience of American companies with branches in foreign countries which have governmental plans.

Clark Amendment

There has been considerable discussion regarding the amendment to the Social Security Act introduced by Senator Clark, under which private plans would have been exempted from the operations of the Federal plan, subject to certain regulations. The objectives of this amendment were desirable, but it would be very difficult to operate such a plan in practice. Many people got the impression that if this amendment were not adopted, company plans would have to be abandoned, but, as has been shown, this is not the case.

One objection to the amendment as first proposed is that when an employee leaves a company with an exempted plan it would be necessary to transfer the reserves to the Federal plan or to some other exempted plan. This would probably cause a change in the investment policy of the trustee or insurance company as heavy transfers might become necessary at certain times.

From the point of view of the employer, the operation of a plan separate from the governmental plan would increase the administrative problems. The individual employee would have the choice between the two, and both would undoubtedly be in operation within the same establishment. The exempted plan would be subject to close supervision by the Social Security Board, and no changes could be made without their approval. The administrative problems of the Social Security Board would also be increased because the Board would have to supervise constantly the operation of these plans, and if the reserves were handled by any agency other than an insurance company, the Board would have to issue regulations regarding the type of investment which could be purchased.

To permit the exemption of private plans might result in selection against the Federal plan. Companies with younger workers and with small pension liability might ask to be exempted, while those with a larger proportion of older workers and with heavy pension liability would wish to stay in the Federal plan. Many companies with

sound pension plans that have given the matter considerable study seem to feel that the simpler arrangement is to administer the private plan as a supplement to the Federal old age benefit plan.

Administrative Problems

The greatest danger to the success of any governmental pension plans lies in the administration. In some foreign countries, the administrative expenses are so high that the benefits to the employee are considerably reduced. It is, therefore, very important that the administrative authorities exert every effort to keep the administration on as simple and economical a basis as possible and the least burdensome to employers. At the same time it should be removed as far as possible from political influences. Fortunately, the personnel of the Social Security Board which will administer the Social Security Act is very good, and employers have every reason to expect that the Board will strive to keep the administration on a sound basis.

The administrative problem is tremendous. It is estimated that twenty-five million persons will be covered by the Old Age Benefit Plan. It will be necessary for the Social Security Board to maintain a record of the contributions for each employee covered, so that the amount of annuity to which he is entitled can be determined when he reaches retirement age. Sufficient data for identification purposes must be obtained for each employee and an identification number assigned to each.

The immediate problem facing the Board is the registration of employers and employees. Contributions from employees must be deducted from their wages after January 1, 1937, and employees must be registered and assigned numbers before the first deductions are made. In order to avoid considerable confusion at the first of the year, some method should be devised for registering employees before that time.

Defects in the Federal Plan

There are several defects in the old age benefit plan set up by the Social Security Act. As indicated in Table I, the benefits do not vary directly with the contributions. The benefits received by the employees in the upper wage groups are much less in proportion to their contributions than those in the lower wage groups. It is sound practice to provide a minimum pension to those in the lower wage groups, otherwise the pension received would not be above the subsistence level. There is grave question as to whether this plan has not gone too far and whether there will not be considerable criticism by the wage earners in the upper wage groups when they realize the situation. For instance, a man with a salary of $250 a month and paying in 1943 the 2% rate, or $60 a year, will not like it when he finds out that his monthly benefit will be $75 while the man with a salary of $100 a month, who pays only $20 a year, will receive a benefit of $47.50 per month. A better plan would have been one which established a minimum benefit, but scheduled the benefits above that level in direct relation to contributions.

A death benefit is provided for the estate of those who die before reaching retirement age, in the amount of 3½% of the wages received by the employee from the time he entered the plan until his death. This will likewise result in wide variation between contributions and benefits.

The greatest defect, however, is that contribution rates and benefits are set up on a basis which would result in accumulating a tremendous reserve fund which, it is estimated, would reach over forty-five billion dollars. It was stated that the purpose was to make it unnecessary for the Federal government to contribute anything toward the cost of the plan any time in the future. The plan which was recommended by the Economic Security Committee, the Advisory Council, and the experts, provided for lower rates of contribution with the idea of keeping the plan on a current-cost basis. Under this program there would have been accumulated over a long period of years a contingency reserve fund of not over ten billion dollars, primarily to take care of emergencies which might arise in future depressions when contributions might be curtailed. This plan would have resulted in a deficit after 1965, which the Federal government would have had to meet. The cost to the Federal government, however, would not have been as much as the cost of the old age assistance plan without any contributory annuity plan.

There are very definite objections to building up such a large reserve fund as contemplated under the present act. For a long time the contributions would be considerably in excess of the payments and there would be a strong tendency during this time to spend the reserve for various purposes or else increase the benefits. If benefits are increased, the burden on future generations would be considerable. The effect of building up this reserve, which would be invested in government securities, would be tremendous on the investment and money markets.

Since it is necessary to have private pension plans on a sound actuarial basis, many persons have assumed that the same rule should apply to a governmental plan, but the problem is totally different. In the first place, the government has the taxing power. Also, an individual or a company can transfer a reserve from one generation to another, but for a government to attempt to do this for the entire population is a different matter.

This major defect can be corrected with little difficulty. The act provides that the combined contribution rates will be increased in 1940 from 2% to 3%. If the original rate is allowed to continue for a number of years, the large reserves will not be accumulated. It is estimated that 2% contributions will provide enough revenue to take care of the benefits until after 1951, or until 1960, if interest is allowed on the reserve which would be built up during the early years.

This whole subject is very ably treated in an article by M. A. Linton appearing in the April, 1936, issue of the *Atlantic Monthly*.[2] It is very important that between now and 1940, employers and the public generally recognize the grave dangers involved in building up this large reserve fund so that the contribution rates will not be increased as scheduled.

Conclusion

If this defect in the plan is corrected, and if the system is administered along sound lines, considerable progress will be made in the coming years in meeting the old age problem, as far as society as a whole is concerned.

[2] "Old-Age Security for Everybody," p. 488.

Industrial companies will find, as in other countries, that the governmental plan will not entirely take care of their pension problems, and it will be necessary to have a supplementary plan. Inauguration of the governmental plan should be of assistance to companies that have not yet taken steps to meet their pension problems or that have not put their pension plans on a sound basis. The companies with sound pension plans can without difficulty adjust them and continue to operate them as supplements to the Federal plan.

INSURANCE IN THE U.S.S.R.[1]

BY S. A. RYBNIKOFF

THE organization of insurance in Russia before the revolution was of a distinctive character. Insurance was provided by joint stock companies, by mutual insurance companies, and also by governmental and communal institutions. Most of the transactions were carried on by domestic organizations, but three foreign companies were operating officially in the field of life insurance. It is to be noted, however, that the majority of the shares of some Russian companies was held abroad. This state of affairs became more pronounced during the World War because of the activity of the Norwegian Wiste group. The presence of foreign capital exerted an influence on the nature and management of the reinsurance operations of Russian joint stock companies.

In general, insurance transactions in Russia were not large before the revolution. Life insurance was little developed; the only branch of insurance which had attained considerable proportions was that against fire. This condition is in general explained by the fact that fires had always been national disasters in Russia, where the great majority of buildings in the villages and even in the cities—except the large ones—were made of wood, and in the villages were roofed with thatch. In fire insurance also we find the greatest variety of forms of organization.

According to the calculations which I undertook in 1916, the total of the premiums collected in all insurance transactions (except for reinsurance) in 1913 reached the figure of 205 million rubles. Table I gives a statement of this income according to the type of insurance organizations and to the nature of the transactions.

Insurance in the U.S.S.R.

History: First Period. At the end of 1917 and at the beginning of 1918, after the Soviets came into power in Russia, revolutionary legislation did not immediately deal with insurance. Nevertheless, the first measures of the Soviet government, since they had as their aims the abolition of all income not earned by work, the annulling of capital and securities of various sorts, and the municipalization of part of the urban buildings, were bound to have an effect upon insurance because they rendered life insurance companies virtually insolvent.

This indeterminate position led the directors of joint stock insurance companies to look for a way out through the organization of an office which should have general management of the insurance business. As a result of steps taken with this objective in view, after conferences in which a representative of the government had taken part, the decree of March 23, 1918, was published, providing for the establishment of the Commissariat and the Council for Insurance Business. The function of the Commissariat was the close inspection of the activity of all insurance organizations, the regulation of reinsurance questions, and close coöperation among all insurance organizations.

[1] Editor's note: Translated from the French by the Editors. Because of the limitations of space, and the timeliness of the discussion of Soviet insurance, Professor Rybnikoff's detailed treatment of Russian insurance prior to the War has been omitted.

Toward the end of 1918, however, the Commissariat was abolished. The reason lay in the penetration of the Soviets into the local (*zemstvo*) insurance organizations, combined with an increasing realization of the principles of a socialist society, which raised the serious question of the socialization of all insurance. In fact, the decree of November 28, 1918, proclaimed a state monopoly of insurance in all its forms, permitting, however, mutual insurance of coöperative property on special bases.

Property insurance transactions were entrusted to the fire insurance department of the Supreme Council of the national economy; and life insurance was given over to the state savings banks to which the personal insurance holdings of the private companies were transferred.

However, the years 1919 and 1920 (the so-called period of military communism) were not at all suited to the development of insurance. Civil war, the instability of money, the lowering of the circulation of money, and the suspension of trade, all made insurance superfluous. As a matter of fact, the decree of November 18, 1919, wiped out all life insurance contracts, and the decree of December 18, 1920, abolished property insurance, which was replaced by state relief for unfortunates. But experience proved that this relief did not actually function. Thus, this first stage ended in the suppression of insurance in general.

TABLE I

THE TOTAL OF INSURANCE PREMIUMS IN RUSSIA FOR 1913

(in millions of rubles)

	Types of Insurance Organizations						
Types of Insurance	*Russian Joint Stock Companies*	*Foreign Joint Stock Companies*	*Mutuals*	*Organizations under Public Law*	*Of These Last, the Zemstvo (municipal village insurance)*	*Total*	*Percentage*
Fire	78.23		10.43	45.77	34.03	134.43	65.59
Life	30.61	11.99	0.39	3.87		46.86	22.86
Accident	3.99		1.60			5.59	2.73
Transportation	15.62		0.23	0.04		15.89	7.75
Plate glass	0.39		0.05			0.44	0.21
Theft	0.32					0.32	0.16
Hail			0.68			0.68	0.33
Against death of animals			0.45	0.30	0.30	0.75	0.37
Total	129.16	11.99	13.83	49.98	34.33	204.96	100.00
Percentage	63.05	5.83	6.73	24.39	16.80	100.00	

Second Period. The following year, 1921, with the civil war ended, was a critical year for the policy of the Soviets in the national economy; this was the beginning of the period of the "new economic policy." Economic and commercial life revived little by little, and measures were gradually undertaken for the stabilization of money. All this was bound to affect the insurance business, which again received its right to live after the signing by V. I. Lenin of the decree of October 6, 1921: at first in the form of property insurance, then, after July 6, 1922, in the form of personal insurance. The insurance business was put in charge of a special organization, the *Gosstrach*, under the Finance Commissariat, but coöperative (mutual) organizations

received the right to organize insurance companies; three were actually created. To aid in the development of insurance and to regulate the activity of all insurance organizations, the decree of July 28, 1922, created the Insurance Council, composed of representatives from different departments. This decree was to put an end to the demands of the different departments to be allowed to organize their own insurance machinery, leaving them the possibility of exerting, through the intermediary of their representatives in the Insurance Council, an influence on the general direction of insurance policy. In general, the effort to end these demands and to keep insurance within this single organization, combined with the necessity of linking insurance with the agencies of the republics and of the union, led to the writing of a new state insurance law for the union. This law was published September 18, 1925.

At this time the Gosstrach already had a very well regulated organization, centralized for the entire union as well as functioning in the republics and the provincial centers, with a great number of agencies. The Gosstrach carried on transactions of the following kinds: (a) fire insurance; (b) insurance on all means of transportation; (c) insurance of animals against death; (d) insurance of crops against hail and frost; (e) guaranty insurance; (f) life insurance; (g) accident insurance; (h) insurance of civil responsibility. In addition, the Gosstrach regulated the reinsurance of its risks—principally those of marine insurance on foreign trade—by also organizing such business. The primary transactions of the Gosstrach were in the direction of the development of obligatory insurance, particularly in the villages, where it offered increased responsibility and introduced—at first uncertainly and then in a more decisive and complete manner—the line of the class principle in the rate structure of insurance. We may note, as a characteristic feature, the large deductions from the revenues of the Gosstrach for measures preventing and combating the different accidents caused by the elements. As a result of the growth of its operations and the increase of its responsibility, the Gosstrach had been obliged to consider the question of the very large guaranty on all the socialized property belonging to governmental institutions and enterprises, including among them communal and coöperative enterprises. In truth, the decree of November 4, 1929, introduced a unified universal insurance against all the dangers to the property mentioned. This measure enlarged excessively the dimensions of Soviet insurance and gave it tremendous importance. Nevertheless, this policy of insurance was short-lived. The enormous proportions which were soon assumed by the socialized state property (tens of billions) and the new credit system of the governmental institutions definitely brought out the utility of insuring these properties in general.

On the other hand, as a result of the new agricultural policy of the Soviet government which followed the introduction of collective methods in this field, it was found necessary to relate the activity of the Gosstrach in the villages more closely with the branches of the Finance Commissariat. It was supposed that in this way economies would be made in the expenses of insurance administration, as was evinced in the decree of February 3, 1931. This law annulled in general obligatory and optional insurance of the property of state institutions, with the exception of some particular cases involving prop-

erty of local importance. The Gosstrach retained only the foreign business, involving importation and exportation, and reinsurance. All the functions of the obligatory insurance within the union, which formerly belonged to the Gosstrach, were now handed over to the central and local agencies of the Finance Commissariat. Personal insurance transactions were returned to the savings banks. At this same time the coöperative insurance societies were abolished. It should be noted here that some time previously the transactions insuring guaranties were voided in order to stimulate the state economic enterprises to better supervision of their methods of service and their funds.

As a result of all these measures, the performance of the functions of all the forms of obligatory agricultural insurance, as well as the insurance of homes, was entrusted to the fiscal organizations. It must be noted also that in 1931 a revision of the terms of the policies was undertaken, with the idea of making them as favorable as possible. This step led to abuses; and in 1933 these terms were revised and the demands made on the insured were raised. On the other hand, insurance rates were raised as well, especially on property which belonged to individuals who took no part in the collective households.

But experience showed that such an alignment of the functions of insurance with fiscal functions gave results very disturbing to the insurance business. The agencies of the department of finance, since they gave more attention to tax questions, were not able to give insurance all the care and all the time which it required, and the insurance business began to decline. This state of affairs could not pass unnoticed. In fact, as early as 1933 the question was the object of live interest on the part of the central offices of the party and of the government. The order was given "to salvage the insurance business from its neglected state without delay."

In accordance with this order, reorganization of insurance administration was carried out. In connection with central offices of the Finance Commissariat for the union, the General Department of State Insurance, the Gosstrach, was created; both in the republics which formed the union, and in the provinces, departments of state insurance were created in connection with the financial agencies. In all districts inspection of insurance was organized. The department of insurance was placed in charge of the transactions within the country, at first in property insurance and then in personal insurance. The insurance transactions in import and export trade, as well as foreign insurance and reinsurance, were carried on by an independent central office which was organized in connection with the Finance Commissariat and called the Direction of State Insurance. These two agencies, the General Department of the Gosstrach and the Direction, were housed in the same building and worked closely together. Following the order received "to make insurance a veritable lever to protect the collective agricultural households and to safeguard public property," the Gosstrach directed its efforts invariably to the accomplishment of this purpose. As we shall point out below, the extent of insurance and the [normal] amounts insured by the Gosstrach increased constantly. There had lately emerged a tendency to lower the rates of insurance and to increase the sums deducted from the income arising from insurance in order to enlarge the business of combating and preventing accidents caused by the elements.

Organization of State Insurance in the U.S.S.R.

Organization of Gosstrach Insurance. The central organization for state insurance for the whole union is the General Department of State Insurance, directed by a chief. This department administers the general organization, supervision, and regulation of all such business within the country. It prepares and publishes general instructions and the terms of insurance in all its forms, and regulates the rates for the entire union. It is this organization also which controls the administration of all insurance funds and their investment.

The general department, being one of the central divisions of the Finance Commissariat, is under the direct supervision of the Commissariat. In the republics and the provinces the state insurance departments are organized in connection with the financial agencies. These departments are responsible for the administration and direction of the state insurance within their respective territorial limits. Within each district a special insurance inspection agency operates, composed of two to four employees according to the size and the resources of the given district. These inspection agencies take part in making a census of the objects to be insured, in paying of claims, and in other actions relative to insurance.

It is to be noted, however, that other local agencies of the general administration were concerned with making the census, with the valuation of insured objects, and with the calculation and collection of payments. The collection of insurance premiums is generally done through the offices of the finance administration. The liquidation of claims, especially the drawing up of claims for losses, furthermore, is done by special commissions, either village or district, according to the character and the size of the disaster. These commissions are composed of representatives of different local organizations.

After the reform of 1931 the Gosstrach carried on primarily the obligatory property insurance transactions. Optional insurance included only insurance of movable private property in the cities. Furthermore, life insurance continued to be optional. The law of 1934 expanded considerably the extent of voluntary property insurance.

Obligatory Insurance. The laws now in force recognize several categories of obligatory insurance. Each of these categories provides a blanket insurance, since it pays damages on all kinds of accidents caused by the elements, though not by war. Three general types of obligatory property insurance are ordinarily recognized.

The first is obligatory property insurance against accidents caused by the elements, without payment of insurance premiums. This insurance covers property belonging to state industrial enterprises which have a local importance, to the communal enterprises, and to the socialized cultural institutions existing at the expense of the local budget, as well as to some types of coöperative organizations. This insurance of socialized property assumes the losses from all accidents caused by the elements according to the cost of reconstruction of these properties without counting depreciation, and for merchandise, raw materials, and combustibles according to book value.

The Gosstrach offers this insurance by means of special credits provided for this purpose in the budget of the union. In 1934 these amounted to 38.4 million rubles.

The second type comprises obligatory insurance with payment of premiums for the following categories of socialized property: property belonging to professional and public organizations, particularly city dwellings belonging to coöperatives of different sorts, and to the trusts for governmental dwellings. This kind of insurance, like the preceding, gives complete coverage, in that it pays indemnities up to the cost of reconstruction. The insurance premiums in this type reached nearly 14.5 million rubles in 1934. Note that as a general rule property belonging to other institutions and to governmental enterprises, the value of which reaches several tens of billions of rubles, is not insured.

Obligatory Okladnoie Insurance. The third type of obligatory insurance is called *okladnoie* in pre-revolutionary and post-revolutionary insurance practice. It is an obligatory insurance issued according to predetermined sums (norms) which do not amount, as a general rule, to the total value of the properties. At present this last rule is no longer effective in regard to insurance of buildings, and yet its old name is preserved.

This kind of obligatory insurance is the most widespread in the U.S.S.R., especially in the villages, and guarantees agriculture against practically all the accidents caused by the elements. This insurance includes (a) *colhoses* of all kinds—that is to say, various associations for common cultivation of the land and in general for similar work in agriculture; (b) coöperative organizations producing some types of raw materials; (c) the members of the colhoses, and other establishments belonging to workmen in the cities and in the villages. As a general rule, in connection with the direction of the Soviet policy of stimulating and supporting collective establishments, the Gosstrach gives greatest attention in the okladnoie insurance to the property of the colhoses and their members.

The size of the amounts insured (norms for insurance), within the limits for which the Gosstrach is responsible, and the insurance rates are set for each year by a special insurance plan. We shall speak of that in detail later.

The Gosstrach enlarged the field of operation of okladnoie insurance each successive year. In 1935 the Gosstrach offered the following kinds of okladnoie insurance:

(a) Against fire and accidents caused by floods, earthquakes, tempests, landslides, hurricanes, showers, lightning, and boiler explosions.[2]

(b) Breakage of glass in hot beds and greenhouses, caused by hail.[3]

(c) Sowings of crops against the following dangers:[4]

  (1) Hail, showers, and storms.
  (2) Frost and floods.
  (3) All damages caused by the elements to various kinds of specialized and technical cultures, such as of cotton, soy beans, castor oil, tobacco, hops, etc.
  (4) Drought—for flax and hemp.
  (5) Fire in the fields for all crops.

(d) Against the death of animals:

[2] This responsibility covered the full value of the property of the colhoses; this was true also of individual households with the exception of insurance against boiler explosion. Beginning in 1935 all buildings had to be insured up to their full value.

[3] This kind of responsibility applies only in the case of the property of the colhoses.

[4] These types of insurance cover all kinds of households, collective and individual.

(1) Large, horned animals, one year old and up (since 1935, from the age of six months).
(2) Horses, camels, and donkeys, two years old and up (since 1935, one year).
(3) Sheep, goats, and pigs, six months and up.[5]
(4) Reindeer, one year and up.
(5) Thoroughbred animals of all kinds from the age of six months.[5]

(e) Insurance against transportation risks:[6]
(1) Fishermen's boats against all risks caused by the elements during voyages and in port.
(2) Fishing equipment (nets, rigging) against all damage received while fishing.

Optional Insurance. Optional insurance on property was carried on by the Gosstrach, up to the writing of the law of July 27, 1934, principally in the form of fire insurance on private property in the cities. Nevertheless, demand arose for an expansion of the ordinary obligatory insurance (okladnoie) in the villages, in the form of a supplementary optional insurance which would be adapted to the individual needs of each household. The decree of July 27, 1934, fulfilled this need. It provided two types of optional insurance.

This was primarily a supplementary insurance "above the okladnoie" used in cases when the insured wished, by supplementary insurance, to protect objects which had already been covered by obligatory insurance, in case he found the norms for that okladnoie insurance too low and not proportionate to the real value of the objects in question. The law here allows a supplementary insurance to the colhoses and to the raw material coöperatives: (a) on their buildings, undertakings, tools, and inventory (except for fishing equipment), within the limits of the difference between inventory value and the real value of the property according to the valuation of the insurance agencies; (b) on the animals in agricultural households within the limits between the fixed norms established for the obligatory okladnoie insurance and the total value according to the valuation of the insurance agencies.

As for the households of the members of the colhoses, and individual workmen's households, the law allows them a supplementary insurance for large, horned beasts and for horses within the limits of the difference between the fixed norms of the liability of the obligatory okladnoie insurance and the conventional values or, in the absence of such conventional values, the state purchase prices.

The optional insurance [of the second type] may apply to objects not insured under the obligatory system (bees, thoroughbred birds, and female rabbits) belonging to collective households; and may cover goats, lambs, and pigs, owned by members of colhoses and individual households. In the cities the practice of insuring private personal property is continued.

The principal kind of optional life insurance carried on by the Gosstrach

[5] Points (d) (3) and (5) are not effective with regard to individual households; exception is made, however, for some breeds of sheep.

[6] Of these kinds of transportation insurance, only the insurance on boats applies to individual households. We must note[7] that this insurance covers all the seas and all the large inland lakes, such as Ladoga, Onega, Baikal, Ilmene, etc., as well as the rivers flowing into them in the case of mixed fishing.

is an insurance in case of death, held by the collectives of workmen or employees occupied in a given institution. Outside of the collectives, this insurance is not in operation. Each member of the collective is insured for the same sum, ordinarily from 1,000 or 3,000 rubles, and according to a common rate for all [the premium is] one ruble a month (that is, 12 rubles per year for insurance to the amount of 1,000 rubles).

Merchandise imported or exported, merchandise in coastal trade, and ocean liners belonging to public institutions and organizations, are also insured optionally in the Direction of State Insurance.

General Principles of the Insurance Business in the U.S.S.R.

In view of the rapid changes of economic life of the country and also of the general system of planning employed in all the branches of Soviet economy, the Gosstrach draws up a plan of insurance each year. The plan for obligatory insurance (okladnoie), after being worked out in the Gosstrach, is examined in the state planning commission (Gosplan), after which it is confirmed by the legislative branch of the government. This plan provides for the kinds of insurance proposed for the operations of the coming year, the size of sums insured and the rates, as well as premium adjustments and abatements in the different kinds of insurance.

The institution of a common plan at the center, and the elaboration by the central organizations of the Gosstrach of common rates and instructions of all kinds, guarantee uniformity of general principles in the Gosstrach system. Moreover, the carrying out of the administrative and financial management plus the attendant control of the business at its periphery enables Soviet insurance to maintain, in a centralized society, a system which is unique in insurance policy. In this way the union can have a centralized system of insurance despite its immense territory.

Nevertheless, despite the tendency toward centralization, the system is sufficiently flexible, especially in the problems of aligning insurance with the peculiarities of the different parts of the territory of the union. In this field —the establishment of norms for the amounts involved and specific rates for a given province—the Gosstrach relies definitely on principles of decentralization. The insurance plan for the whole union provides norms for the amounts insured and for premiums only for each of the seven republics forming the union. The governments of these republics established the norms and rates for their own provinces within the limits of the norms given them by the central organization. In their turn the higher organizations of these provinces parcel out in the same way the amounts insured and the rates to the districts and the cities which belong to them.

Peculiarities of Modern Soviet Insurance. State insurance in the U.S.S.R., aside from its general function—to guarantee the replacement of property destroyed by the elements—fulfills also many others. Pursuing the policies of the reconstruction of all agriculture on the principles of collectivism and of encouraging initiative in the enlargement of the agricultural households, the Soviet state takes all the measures necessary to stimulate these developments in all branches of the national economy. In insurance this principle is shown in the following way: For the property of the colhoses there is a larger group of risks against which their properties are insured; the colhoses re-

ceive the highest norms for the amounts insured, and the lowest rates. The same condition holds true in respect to the insurance of the property of members of colhoses in comparison with the insurance of property of other households.

The imposition of the premiums for insurance of summer sowings not according to the real surface covered, but according to the surface proposed by the plan, makes possible insuring all of the surplus *gratis*. Similarly, rate reductions up to 25% are accorded on insurance of animals belonging to those colhoses which show the best examples of herd conservation and development.

Among the measures of general policy and of the application of the class principle is the regulation that property belonging to the households of *kulaks* (households which employ hired workmen) is not insured under either obligatory or optional insurance. A series of adjustments and abatements of rates has the object of making it easy for several categories of insured who, as a result of considerations of policy and of the class principle in general, are placed by the state in a more favorable position in comparison with the other classifications of citizens.

It is to be noted that as much as 15% of the premiums collected is assigned by the Gosstrach for prevention and fighting of fires, floods, and the death of animals. One peculiarity of the insurance of the union consists of insurance against accidents in transportation. This insurance falls in the obligatory class through a certain surcharge on transportation rates.

By raising the norms for insurance, and by extending insurance to cover practically all kinds of damage caused agriculture by the elements, the Gosstrach contributes to the amelioration of the general condition of plant and animal husbandry in the union as compared with the pre-revolutionary conditions, when the insurance of animals and plants was almost completely lacking. While the Gosstrach has considerable free sums at its disposal, it is subordinate to the directions of the general financial and credit policy of the Finance Commissariat in the matter of their investment.

Insurance Transactions and the Financial Condition of the Gosstrach

Insurance Holdings. The greater part of the insurance of the Gosstrach is okladnoie insurance. Because of the originality of the methods used in constructing norms of insurance—*i.e.*, the amounts within the limits of which each object is insured—this question must be discussed. At present, buildings, inventory, raw materials, and provisions are insured as a general rule by the obligatory okladnoie insurance against fire and other dangers up to their entire value. This rule applies to property belonging to the colhoses as well as to the property of members of the colhoses and other households which do not employ hired workmen. Fishing vessels of the colhoses are also insured for their entire value, whereas vessels which belong to private persons are insured only up to 75% of their value.

As for the insurance of agricultural crops against hail, showers, storms, etc., and of animals against death, the sums insured are established in stated amounts (*oklads*) for a hectare of the given crop or per head of the various kinds of animals. The size of these amounts increases progressively. In accordance with the general line of Soviet policy, these norms are higher for the colhoses. In giving by means of insurance a guaranty within the limits of these norms, the law allows the sup-

plementary insurance of a given property in the class of optional insurance.

The general amount of sums insured for the last three years is given in Table II. Of this sum nearly half is for insurance against fire and other dangers caused by the elements, and nearly a third for insurance of agricultural operations.

TABLE II
THE AMOUNT INSURED BY OAKLADNOIE INSURANCE
(in billions of rubles)

	Kind of Household			
Year	*Colhoses*	*Members of Colhoses*	*Other Households*	*Total*
1933	14.4	9.5	12.0	35.9
1934	19.6	12.9	10.6	43.1
1935	20.3	17.6	9.5	47.4

As we have noted above, an outstanding feature of Soviet personal insurance is the development of short-term collective contracts insuring in case of death. This insurance included:

	Million Persons
1931	1.8
1932	4.5
1933	5.6
1934	7.2

Most of these contracts are drawn up for the sum of a thousand rubles per person insured.

Insurance Revenues and Payments. Because of the successive enlargement of the circle of operations and of the growth of the sums insured, the amount of the Gosstrach's insurance revenues and payments increased each year.

One peculiarity of the Soviet obligatory okladnoie insurance is that the insurance payments for the year about to begin are made ordinarily at the end of the preceding year. It follows, therefore, that in the insurance statements very large sums are always carried over as reserves against premiums (carry-over of premiums) from one year of account to another. The general fluctuations of revenues and payments of Gosstrach insurance for 1933 and 1934 are shown in Table III. Of the total sum of revenues from okladnoie insurance, 856.1 million rubles, the share of the colhoses is nearly 44½%, that of members of the colhoses, 25½%, and that of other domestic establishments, nearly 30%.

Table IV gives a picture of the movement of funds classified according to the principal items of receipts and expenditures of the okladnoie insurance for the years 1932, 1933, and 1934. It shows that insurance against fire and

TABLE III
REVENUES AND DISBURSEMENTS OF THE GOSSTRACH
(in millions of rubles)

Receipts	*1933*	*1934*	*Expenditures*	*1933*	*1934*
Premiums reserved for the beginning of the year	578.6	813.5	Payments of claims	217.1	441.3
Reserves for unpaid claims for the beginning of the year	33.1	29.3	Premiums reserved at the end of the year	783.6	843.5
Income from premiums	907.7	1,035.0	Reserves for unpaid calamities at the end of the year	20.6	25.1
Received from reinsurers	1.8	1.5	Paid to reinsurers	1.9	1.6
Interest and profit	55.3	55.5	Assigned for combating risks caused by the elements	69.4	84.0
			Assigned for amortization of uncertain debts	0.4	1.8
			Administrative expense	31.6	48.1
			Profit	451.9	489.4
Total	1,576.5	1,934.8		1,576.5	1,934.8

Note: The lack of agreement between the sums collected at the end of 1933 and at the beginning of 1934 is explained by the fact that life insurance transactions did not appear on the Gosstrach balance sheet for 1933.

TABLE IV
OKLADNOIE INSURANCE
(in millions of rubles)

	Year	*Fire and Other Dangers*	*Agricultural Crops*	*Animals*	*Boats*	*Total*
Income from premiums	1932	231.2	235.6	169.6	0.4	636.8
	1933	305.8	286.6	258.7	1.0	852.1
	1934	334.1	286.9	233.6	1.5	856.1
Payments of claims	1932	68.2	110.5	161.3	2.2	342.2
	1933	56.4	59.7	76.9	2.3	195.3
	1934	97.8	114.0	109.3	2.6	323.7
Premiums reserved (premiums to be carried over) for the end of the year	1931	117.2	136.2	149.7		403.1
	1932	217.1	212.2	144.8		574.1
	1933	281.0	262.3	234.6	0.3	778.2
	1934	313.8	265.7	215.7	1.1	796.3
Net position	1932	62.5	55.2	8.9	−1.5	125.1
	1933	169.2	172.8	89.5	−0.9	430.6
	1934	179.0	146.6	117.9	−2.0	441.5

other damage caused by the elements to buildings and furnishings continues to hold first position.

The movement of life insurance funds in 1934 is shown in Table V, and the movement of premiums and payments of collective life insurance is shown in Table VI. As we have noted above, the development of collective life insurance is a characteristic feature of personal insurance in the U.S.S.R. The figures show clearly the progressive growth of this type of transaction, offered on the optional principle.

Deductions of moneys for combating damage caused by the elements—sums which increase progressively—are also a characteristic feature of Soviet insurance. For this purpose there were assigned 44 million rubles in 1932, 68.4 million rubles in 1933, 84.0 million rubles in 1934; and, according to the plan for 1935, 118.8 million rubles were assigned. These deductions, intended principally to combat fire and to provide measures for veterinary aid, are expended for the most part in the villages.

Capital of the Gosstrach. Because of the continuous growth of the insurance operations of the Gosstrach and their not unfavorable character, assets increased each year, and in 1935 reached very large proportions, as we see in Table VII. The figures in the statement definitely show this increase. The Gosstrach invests its free capital in government securities, the total of which on

TABLE V
LIFE INSURANCE, 1934
(in millions of rubles)

	Collective Insurance	*Individual Insurance*	*Total*
Premiums reserved for 1934	12.5	17.5	30.0
Income from premiums	96.8	2.0	98.8
Interest and income	3.1	0.1	3.2
Indemnities (paid)	60.1	1.4	61.5
Administrative expense	8.6	0.1	8.7
Premiums reserved for 1935	13.6	18.7	32.3
Net Position	+34.8	−0.4	+34.4

TABLE VI
PREMIUMS AND PAYMENTS FOR COLLECTIVE LIFE INSURANCE
(in millions of rubles)

Year	*Income from Premiums*	*Payment of Claims*
1931	8.8	3.3
1932	37.3	16.0
1933	71.4	44.2
1934	96.8	60.1

TABLE VII

STATEMENT OF THE GOSSTRACH, AS OF JANUARY 1
(in millions of rubles)

[*Assets*]	*1928*	*1933*	*1935*	[*Liabilities*]	*1928*	*1933*	*1935*
Cash and current accounts	104.3	190.8	699.2	Special capital and reserves	61.9	256.4	718.9
Miscellaneous securities	68.8	796.3	1,348.3	Special funds	37.5	92.0	139.3
Inventory	4.6	3.0	3.7	Reserve premiums and carry-over of premiums	53.2	576.6	843.6
Accounts receivable	48.1	94.4	190.6	Reserves for unpaid damages	11.1	31.2	25.2
Deductions for the account of the following year		53.5	124.5	Other reserves		47.8	98.8
Local institutions	33.4	118.1	29.4	Accounts payable and sundry	12.1	17.8	51.1
				Local institutions	33.4	118.1	29.4
				Profit	50.0	116.2	489.4
Total	259.2	1,256.1	2,395.7	Total	259.2	1,256.1	2,395.7

January 1, 1935, had reached almost 1,350 million rubles. Of the 1934 profit of the Gosstrach, 129.2 million rubles came from insurance transactions relating to collective households, and 360.2 from other insurance transactions.

A PROBLEM IN INDUSTRIAL PHYSIOLOGY AND MEDICINE

BY JOHN H. TALBOTT

SKILLFUL supervision of complicated machines became a routine in industry long ago. Its purpose was not only to obtain from them maximum efficiency, but also to preserve their mechanism and thereby prolong their life. In a like manner the human machine demands expert supervision in order to preserve its mechanism and to work effectively. The methods of providing for such supervision are beyond the scope of this paper. We have accumulated data, however, showing the direct benefits to one branch of industry when such medical supervision has been applied. These data were obtained in part from investigations in the iron and steel industry, but their application is possible wherever men are working in high temperatures.

Our investigations described in this paper concern the physiological and pathological effects of high temperature upon workmen. More than five years were spent in the accumulation of these data which enlisted the energies of several institutions. The deductions from this study, if skillfully applied, will be of practical benefit to several hundred thousand workmen each year.

The Harvard Fatigue Laboratory

The data which will be presented were collected at the Fatigue Laboratory in Harvard University, at the Massachusetts General Hospital at Boston, and at other places under the supervision of these laboratories. The interest of the Fatigue Laboratory in problems of Industrial Hygiene dates from the time when it was organized, more than ten years ago, as part of a search for a generalized scientific description of the experiences of individuals in their environment. This laboratory is situated in the Graduate School of Business Administration; it is supervised by a committee selected from this school, from Harvard College, and from Harvard Medical School, and it functions as a separate branch of the University.

The accumulation of data necessary for the description of the experiences of individuals in their environment may be divided into several parts and the investigation in two or more stages. The form, the structure, or the anatomy is to be studied first. This study may be considered under the conventional term, anatomy, but for our purpose will be extended so that it will include chemical constitution of the body as well. This part comprises those problems which are basic in nature and similar to those which form the ground work for any scientific investigation whether it be in the field of Applied Mathematics, Anthropology, or Clinical Medicine. The second stage in the investigation of problems in Industrial Hygiene pertains to function, and is commonly called physiology. The third and last division is concerned with the application of the anatomical and physiological data. The dependence of Applied Physiology and Industrial Hygiene upon the biological sciences is similar to the dependence of applied mechanics upon the laws of thermodynamics, which in

turn were preceded by the discovery of the laws of force and motion by Galileo and Newton.

The application of physiological and biochemical descriptions is of especial interest to the individuals who have made the observations, but this interest is not confined to them. The practicing doctor is concerned with the application of biological findings in order to have a better understanding of disease and for the treatment of sick persons. The industrial surgeon is concerned with the utilization of certain biological information in order that the morbidity and mortality rates among workmen may be reduced through prevention of accidents and disease. And lastly, there is the layman's interest in the biological sciences, an interest which has rapidly increased during the past decade. This last interest has outgrown the stage of emotional sympathy and has developed into one of intellectual understanding based upon the knowledge that sound health among workmen is advantageous both to them and to their employers.

Effects of High Environmental Temperature

The data with which I am dealing are derived from a study of the effects of an elevated and at times excessive temperature on men engaged in strenuous physical activity. The term "excessive temperature" is a relative one, but conveys in the minds of most readers a temperature which produces profuse sweating and a diminished capacity for work. With this inclusive definition, it should be obvious that the data presented will be directly or indirectly of interest to most people living in a temperate climate, as well as to those who work in a high environmental temperature. The man who plays golf or tennis in the hot sun is subject to similar physiological changes as a result of the exposure, just as the laborer who works before a furnace in a steel mill. Most individuals who exercise in a high temperature, in contrast to workmen at hot jobs, do not become sick, but the response by the body is similar and varies only in degree.

In the study of the effects of high temperature, it is desirable first to have information concerning the physiological and biochemical reaction to temperatures which are not sufficiently severe to cause sickness. After these data have been collected, the interpretation of the changes in the body of those who are incapacitated by high temperature is facilitated. For example, when it is known that a full day's work before a blast furnace will lead to certain illnesses in workmen, it is possible to study the body changes produced by one or two hours of work instead of eight hours. When these small or physiological changes have been studied and interpreted, then one proceeds to the investigation of those persons who become sick following longer periods of exposure.

Accumulation of Physiological Data

The first part of this project began at the Fatigue Laboratory under the direction of Dr. D. B. Dill. It was not convenient at that time to study workmen employed at hot jobs, and in their place members of the laboratory staff acted as subjects and performed graded work in a heated room. In addition to the laboratory studies performed in Boston, field investigations were conducted in various places. The combination of the laboratory and field data proved especially valuable, and physiological descriptions of nor-

mal subjects living and working in high temperatures were obtained. The first field expedition which collected data of interest to us was in the Panama Canal Zone in 1929. There a study of normal men exercising in a humid atmosphere was made. Investigations into the amount of oxygen carried in the blood and consumed in the tissues by subjects performing a known amount of work were enlightening. In an atmosphere with a high relative humidity and a high external temperature, it was observed that the work was done with the same mechanical efficiency and with the utilization of the same fuels as in an environment with a moderate temperature. It was further observed that the high external temperature was associated with an increased heart rate and that the body became exhausted earlier than it did while performing the same work at a lower temperature. The probable explanation of the latter observation is that the heart muscle reached the limit of its ability to work and attained its maximum rate while no other part of the organism was working at capacity. The importance of this observation will be discussed later. An incidental item is that these data offer a physiological explanation for tropical and hot weather lassitude.

Three years after the first expedition, similar studies were pursued in Boulder City, Nevada, at the building site of Boulder Dam. In this place the contrasting condition was a very hot but dry atmosphere. In addition to the confirmation of various physiological observations, an inquiry was begun into the biochemical changes associated with exposure to heat as well as an investigation into the mechanism of adaptation to high temperature. In this study it was noted, among other things, that there was a loss of body weight in the first days after going into such an environment. This loss occurred in spite of the greatly increased fluid intake and was not replaced until several days had elapsed. The loss of weight during the first days in a high temperature was associated in some individuals with a diminished food intake. In most subjects, however, it was principally due to a loss of body fluid by way of the sweat glands. The excretion of sweat in these individuals was necessary for the dissipation of heat and the maintenance of life in high temperature.

Dissipation of heat by the body is accomplished by the evaporation of the water which is the principal constituent of sweat. Sweat contains in addition to water certain mineral substances which for our purposes may be called salt. The principal salt is sodium chloride or ordinary table salt. This salt exists in sweat in varying concentrations, but is always present irrespective of the degree of sweating. The amount of sweating of a healthy individual is related to physical activity as well as to the atmospheric temperature. Sweating may occur in a cool climate if exercise is severe, while a hot climate causes a person to sweat at lower grades of activity. Quiet life in a hot climate does not lead to excessive loss of water and salt. But strenuous activity in a hot climate is accompanied by enormous losses of these substances in the sweat.

In the intervening years between the two field studies, allied problems were investigated in the Fatigue Laboratory as well as in the medical research laboratory in the Massachusetts General Hospital. The physiological and biochemical ground work proceeded in a slow methodical manner which at times seemed laborious but was never un-

interesting. The data collected were interesting in themselves and essential before problems in applied physiology could be approached. The opportunity to proceed with the next step came in 1934 through an invitation from the Youngstown Hospital Association in Ohio. This invitation offered to place at our disposal for investigation a large number of subjects suffering from the ill effects of heat. These subjects were men working in the steel mills at excessive temperatures who had become incapacitated because of a condition for which no satisfactory treatment was available. The undertaking was borne jointly by the Youngstown Hospital Association, three steel companies in Youngstown, and the Harvard Fatigue Laboratory. The participating steel companies—the Youngstown Sheet and Tube Company, the Republic Steel Corporation, and the Sharon Steel Hoop Company—were responsible for the local expenses. The Youngstown Hospital Association provided excellent hospital facilities which included a ten-bed ward, graduate nurses, a full-time interne, and a dietitian. To me, a clinician, it was gratifying to have the Fatigue Laboratory participate in this study of the pathological changes produced by high temperature.

Pathological Conditions Produced by High Temperature

The failure of the body to carry on its usual physiological functions in a high environmental temperature does not arise in all persons in the same way, and when a series of patients are studied several distinct diseases may be recognized. In the large cities in the summer the aged and infirm may be affected by the heat even though their activity is restricted or negligible. This condition is called sunstroke, and is probably caused by an exaggerated physiological response similar to that observed in normal subjects in the Canal Zone. The physiological response, which assumes pathological proportions at times, is accompanied by a dilation of the blood vessels of the skin, leading to an additional burden on an already overtaxed heart and vascular system. Sunstroke is an industrial hazard, but not an important one. The majority of the workmen in the industries today are neither aged nor infirm, but healthy persons liable to other harmful effects of high temperature. These effects are known by the descriptive terms *heat cramps*, *heat prostration*, and *heat hyperpyrexia*.

The clinical description of a patient suffering from the ill effects of heat serves no important function in this discussion and will be mentioned in a cursory fashion only. A patient with heat cramps suffers from severe pain in the affected muscles and usually has no other complaints. The pain from cramps is most excruciating and one of the severest types observed in clinical medicine. Various observers have stated that the agony experienced by the men was more severe than from any other cause. On the Boulder Dam project in the summer of 1931 several workmen jumped into the treacherous Colorado River because of the severity of the pain. If for no other reason than for the relief afforded, a satisfactory method of prevention and treatment of cramps is highly desirable.

The differentiation between heat cramps, heat prostration, and heat hyperpyrexia is not a difficult one. In the last condition, the body temperature is increased above 105° F. and the heart rate becomes alarmingly rapid. Neither of these signs is observed in patients with heat cramps. The diagnosis of heat

prostration is made by exclusion. If a subject performing strenuous work in a high environmental temperature becomes faint, is forced to stop work, and has neither cramps nor a high body temperature he is probably suffering from heat prostration.

Historical

The deleterious effect upon the body of a high external temperature has been recognized for more than 2,000 years. In the Bible there are several references to victims of the heat. In the eighth chapter of Jonah there is the passage: "And it came to pass, when the sun did rise, that God prepared a vehement east wind; and the sun beat upon the head of Jonah, that he fainted, and wished in himself to die and said, 'It is better for me to die than to live.'" There are older passages in recorded history and mythology pertaining to the ill effects of heat but it is uncertain whether these refer to uncomplicated heat cases or to complications secondary to drought, pestilence, and famine.

The first mention of heat cramps in contemporary literature was not made by a member of the medical profession, but is contained in the military descriptions of the campaigns of Frederick the Great. During these campaigns many of the soldiers complained of severe cramps in the legs following long marches in hot weather. In English literature the earliest report of heat cramps was issued from the gold mines in Virginia City, Nevada, in 1878. No name was assigned to the malady at that time, but the occurrence of severe cramps in the legs of miners working in temperatures as high as 120° F. is characteristic of this disease. In the last quarter of the nineteenth century heat cramps as a separate disease was frequently recognized and reported in miners, stokers, firemen, and workmen in sugar refineries. At the beginning of the present century, the rapid growth of various industries in this country was accompanied by a rapid increase in the incidence of this disease in certain regions. In the iron and steel mills this was especially true, and the number of men with heat cramps observed each summer in these trades reached an alarming sum. Previous to this time little was known concerning the pathogenesis, the treatment was purely empirical, and the methodical investigation of this condition as a disease entity was just beginning. One of the pioneers in this work was Dr. David L. Edsall, former Dean of Harvard Medical School, who presented the first descriptive knowledge of the disordered physiology in this condition. The large number of men suffering from heat cramps in the Pittsburgh steel district furnished him with an abundance of clinical material of the mild as well as severe types.

Incidence in Industry

Data regarding the incidence of heat cramps and heat exhaustion in industry are most unsatisfactory. It is recognized that these conditions are very common in many industries, but the diseases are not reportable as are contagious diseases like scarlet fever or diphtheria, and we have no statistics concerning the number of workmen who are afflicted each year. The problem of incidence is complicated further by the fact that many workmen with heat cramps are not sufficiently ill to be sent to a hospital and have not been educated to seek medical advice. Such workmen are nevertheless sick, and their working efficiency is lowered. In an attempt to gain some idea of the number of men in industry suffering

from the ill effects of heat, certain assumptions give us approximate figures. In the year 1934 there were approximately 250,000 workmen engaged in the iron and steel industry in this country. During the same year there was an average of about 12,000 men employed in the Youngstown steel district. Between May and September more than 100 of the Youngstown workmen were hospitalized because of the heat. Assuming the same proportion throughout the country, more than 2,000 men in the iron and steel mills alone were hospitalized in 1934 because of this condition. In addition to the men sufficiently ill to be sent to a hospital, at least the same number were mildly afflicted and recovered at home. In Youngstown it was observed that most of the men who had been employed for more than a decade at the hot jobs in the steel mills had experienced one or more attacks of cramps. Of the other occupations information is completely lacking. It is known that the ill effects of heat are observed in many other industries, such as glass, rubber, paint, tile, metals, and baking, as well as those requiring men to work out of doors in the summer months. It is safe to say that the ill effects of heat have been one of the major medical problems in industry during the past two generations.

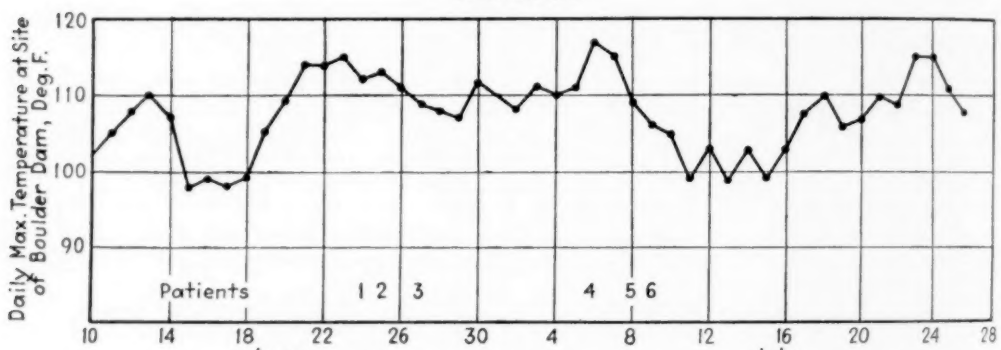
Meteorological Conditions and Predisposing Factors

One part of the study of the disturbed physiology and biochemistry in working individuals exposed to high temperatures concerns the effect of various meteorological conditions. It is obvious that a *high working temperature* is essential, but the degree of elevation is the determining factor. At Boulder Dam the atmospheric temperatures were essentially the same as the working temperatures, and in that location the workmen had heat cramps on the days when the temperature exceeded 112°F. (Chart I). In sugar refineries, when men reported off duty because of cramps the working temperature was frequently as high as 135°F. Probably the highest working temperature for any large group of men is found in the steel mills, where temperatures as high as 3,000°F. are encountered many times during a day's work.

Not only are heat cramps and heat prostration a function of the working

CHART I

ADMISSION DATA AT BOULDER DAM FOR PATIENTS WITH HEAT CRAMPS AS A FUNCTION OF EXTERNAL TEMPERATURE



temperature but the *atmospheric temperature* is important. This is indicated by the seasonal incidence of these conditions. In the Youngstown steel district from 1929 through 1934 more than 90% of the patients hospitalized because of the ill effects of heat reported off duty between April and October of each year. Of less importance than the temperature is the *relative humidity*. Patients succumb to heat prostration and to heat cramps in atmospheres of low relative humidity as well as in those of high relative humidity. In this respect, no industrial occupation which is associated with a high temperature is exempt from these conditions.

The predisposing factors which increase the susceptibility to heat are known in most instances, and heed should be taken of them by the industrial surgeon. *Organic disease* and *ill health* generally increase the susceptibility of the human body to sudden changes in temperature. This is especially evident in large cities during the summer heat waves, when many of the victims of the heat have an organic malady which probably contributes to their breakdown.

Alcohol has been accused of increasing the susceptibility to heat since the earlier discussion of this malady. There are few total abstainers among workmen in industry, and it is important for us to have exact information regarding the importance of alcohol in the production of disease. Chronic alcoholism as a disease is associated with a disturbance of the stomach, liver, heart, or brain. When this condition is recognized the individual should be handled as any other patient with a chronic disease and transferred to an easier job. The number of workmen suffering from this specific malady is probably small and the problem of their disposition is easily solved.

Acute alcoholism, on the other hand, is an important predisposing factor and an acute alcoholic bout is a frequent forerunner of heat cramps. It may be said rather dogmatically that anyone who has been on an alcoholic bout and has consumed little or no food during this time is a fit subject for heat cramps, and remains so until he has completely recovered. In this discussion reference to alcohol implies the stronger drinks rather than the milder ones. Certain advantages may be gained from the consumption of salted beer in moderate quantities. In the industrial section of the Ruhr in Germany, salted beer is a common beverage and the incidence of heat cramps is presumably low. A similar situation has been observed among the colliers in certain mining regions in England.

Susceptibility to Heat Cramps

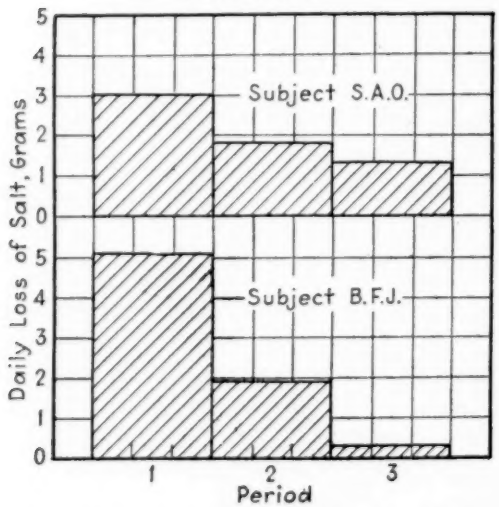
Susceptibility to heat cramps implies that adaptation to strenuous work in a high temperature has not been gained. An absence of adaptation to high temperature is generally evident during the first days of a heat wave and the incidence of cramps is greatest during this time. Consideration of the available data suggests a maximum susceptibility to heat cramps following a sudden elevation in environmental temperature with decreasing susceptibility as the hot weather continues. This is illustrated in Chart I, with data from Boulder City. During the summer of 1932 there were three periods when the atmospheric temperature at Boulder Dam exceeded 112° F. On each of these occasions workmen were admitted to the hospital suffering from over-exposure to heat. Following these exceptionally high temperatures, the daily

maximum generally exceeded 100° F. but heat cramps were infrequent. It was concluded that the non-affected workmen became adapted to the high temperatures during the initial peaks of each hot weather period and were not susceptible to the ill effects of heat in the following days.

If the phenomenon of adaptation to high temperature is accepted as probable, an inquiry regarding the mechanism

CHART II

AVERAGE DAILY LOSS OF SALT IN THE SWEAT BY MEMBERS OF THE LABORATORY STAFF ARRANGED IN THREE-DAY PERIODS AFTER ARRIVAL AT BOULDER CITY



is in order. As a part of the study in the summer of 1932, several members of the laboratory staff were placed on a constant diet while living in a cool region in southern California. All urine samples were collected and analyses of these told us the amount of salt excreted through this channel each day. From the analyses of the diet the amount of salt consumed each day was determined. The difference between the amount of salt in the food and the amount excreted was approximately the amount lost in the sweat. When this amount had reached a constant level in the cool climate the men were transferred in a few hours to Boulder City where the atmosphere was hot and dry. In this place the diet and physical activities were essentially the same as they were in the cool climate. The different physiological response was principally related to the profuse sweating. Again the difference between the amount of salt in the food and that excreted in the urine was the quantity lost in the sweat. During the first few days after arrival in the hot climate the amount of salt lost in the sweat was very great. As the subjects continued to live in the same high temperature the amounts of salt lost in the sweat became progressively less. In Chart II are shown these data from two subjects.

It is seen that in subject B.F.J. the amount of salt lost in the sweat decreased from 5.1 grams to less than 0.5 grams during the nine days after arrival. During the critical period of adaptation the sweat glands are excreting the maximum amount of salt, and if a man is engaged in hard work cramps are likely to occur at this time. In the subjects to whom I have just referred physical activity was not great and heat cramps were not observed. If these subjects had performed eight hours of work as was done by the men engaged in the building of Boulder Dam, heat cramps might have ensued. Among the laboratory staff the loss of salt in the sweat did not exceed the intake. In workmen, the loss of salt at times may exceed the amount consumed and the body reserves are then called upon. If this unbalance persists for several days, the concentration of salt in the body may be lowered to a critical level. This depletion is intimately associated with the production of cramps.

The deductions which may be drawn from the study of adaptation to high temperatures are important. Since the susceptibility to cramps seems to be greater in the first days of a heat wave, this may be controlled by one of two methods. The intake of salt may be increased so that it will always exceed the output in the sweat, or excess loss may be checked by diminishing physical activity.

Chemical Changes in the Body

The chemical changes in the blood in patients with heat cramps and heat prostration give us the clue to the understanding of the pathological processes. A sample of blood drawn from a patient suffering from severe heat cramps shows a variation from the normal in several constituents. There is an increase in the concentration of red blood cells as great as 20% and an increase in the concentration of solids in the blood serum as great as 25%. In clinical subjects, an increased concentration of red blood cells and the serum solids is associated with a loss of water from the blood and is called dehydration. The concentration of most substances in the blood varies in health within a very small range. Throughout our life, whatever may be the change in external environment, the body attempts to maintain its internal environment. When changes of the magnitude of 25% are observed we know that we are dealing with important pathological processes.

There is another interesting phenomenon demonstrated by the body regarding its fluid content. This is the property of needing dissolved substances for the water in every part of the body. The dissolved substance may be considered for our purposes to be principally salt. When we speak of physiological salt solution we refer to a solution with a salt concentration approximately the same as that maintained by the body. This concentration is about 0.9%. If we were to analyze body fluid, such as serum oozing from a cut or blood obtained from a vein, we should find about 0.9% salt present. Not only does the body need dissolved substances in the water within it but when the body excretes fluid it excretes not pure water but fluid containing dissolved substances. I have previously mentioned that the principal dissolved substance in sweat is salt. The concentration of salt in the sweat, however, is not as great as 0.9%. For men working in a hot environment this is an extremely fortunate circumstance. If the body excreted sweat with a 0.9% concentration of salt, it would be difficult to replace the salt loss quantitatively in a man losing two or three gallons of sweat per day. Even though the salt concentration in the sweat is lower than in fluids contained within the body, the amount of salt lost in a day may approach a startling figure.

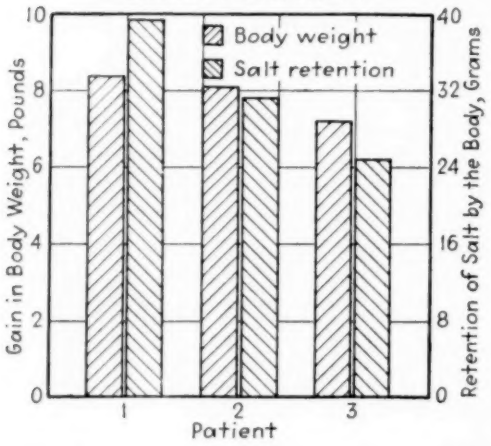
To return to the subject of chemical findings in the blood of patients suffering from heat cramps, it is not surprising to find that this is associated with dehydration and that the concentration of salt in the body is diminished. The concentration of salt is diminished in these subjects by means of a mechanism which is easily understood. The water lost in the sweat is replaced in part by consumption of fluid caused by thirst. The replacement of water alone does not suffice, however, and the salt remaining in the body is merely diluted. As the subject continues to sweat there is additional salt loss with repeated replacement of water only. When the reserves of body salt have been seriously

depleted and diluted then heat cramps may follow.

Subjects susceptible to heat cramps have not been studied during the prodromal period and data regarding the amount of salt lost must be obtained indirectly. Thus, gain in body weight and retention of salt during recovery is interpreted as an index of the loss of these constituents before the onset of cramps. In Chart III are given such data from three

CHART III

GAIN IN BODY WEIGHT AND RETENTION OF SALT BY THE BODY DURING RECOVERY FROM HEAT CRAMPS AT YOUNGSTOWN



patients seen in Youngstown. This change from the normal chemistry of the body is associated with the production of heat cramps. It is the prevention of this change which is necessary for the elimination of heat cramps from industry, and it is the restoration of the salt concentration to normal which is necessary for the treatment of this disease.

All the changes in the chemistry of the body which have been discussed above have been observed in varying degrees in patients suffering from heat cramps. These changes have not been observed in patients suffering from heat prostration or hyperpyrexia; apart from them it is necessary for our argument to state that the concentration of all of the other constituents measured was essentially unchanged. In view of the hypothesis that an acidosis or a disturbance of carbohydrate metabolism might be the causative mechanism in the production of cramps, such information is of great importance. Without presenting experimental evidence, it may be said that the degree of acidosis observed in the patients with heat cramps was insignificant and certainly negligible as a factor in the production of this malady. A similar conclusion may be deduced concerning a disturbance of carbohydrate metabolism.

Sweating

The importance of sweating in the production of heat cramps has been discussed but other information regarding this subject is pertinent. A belief that sweating ceases before the onset of cramps is common among men working at hot jobs. This is one sign closely watched for which promptly causes men to stop work. From the clinical observation of patients with heat cramps it may be inferred that cessation of sweating is a rare event. The failure to continue sweating occasionally observed among subjects exposed to high temperatures is, nevertheless, a danger signal; it represents a failure of the body to dissipate heat adequately and undoubtedly is an important factor in the pathogenesis of heat hyperpyrexia. It is obvious that no man should be allowed to continue work who is not able to sweat because he is, therefore, unable to dissipate heat by evaporation.

The volume of sweat commonly lost by a workman during a day's work in a steel mill varies between five and

fifteen quarts. The amount of salt contained in this volume of sweat varies between three and ten teaspoonsful. This maximum amount represents about 20% of the readily available salt in the body. If the amount of salt lost in this manner is replaced daily, then heat cramps need not be feared. If the amount lost is not replaced, the body is subject to a hazard for which nature has made no adequate provision. This failure of nature to provide for loss of salt may be contrasted with the adequate provision for economy of water. When the body supply of water is depleted, the kidneys secrete a smaller volume of fluid and a sensation of thirst is noted. But irrespective of the degree of salt depletion suffered by the body there is no increased craving for salt. The absence of this craving makes it imperative, therefore, that adequate provision be made for increasing the salt intake when sweating is profuse.

Treatment and Prevention of Heat Cramps

The use of salt solution for the treatment of patients suffering from the ill effects of heat is several decades old. In 1898 a naval surgeon advised the use of salt solution in the treatment of heat exhaustion. There were no chemical studies made of the changes in the blood in such patients and the use of salt was empirical. In recent years Haldane has emphasized the importance of salt in the treatment of heat cramps, but his advice was not generally followed and as recently as 1934 at least one steel company advised against its use. In our experience the use of salt solution in the treatment of all severe cases of heat cramps was highly satisfactory. Every patient who was given salt solution was relieved of his cramps before the treatment was finished. All attempts to induce cramps following the treatment were unsuccessful and a few hours later most patients were able to take a normal diet. In view of the causative mechanism of the production of cramps and the success of salt therapy where tried, it is believed that this may be considered a specific therapeutic agent.

The prevention of heat cramps is probably the most important aspect of this discussion. It is desirable to have specific information concerning the cause of a disease and the treatment, but the prevention is of more significance than either of them. Prevention will be discussed generally and specifically.

Good health among workmen has long been stressed and vigilance concerning its enforcement should never be relaxed. Frequent and thorough *physical examinations* and compulsory absence from work of all men who are sick should decrease the incidence of heat cramps. The more thorough and more frequent the physical examinations the greater would be the opportunity for detecting organic disease. If this system were followed, the workmen as well as the company would be protected against this industrial disease.

The *diet* of men exposed to conditions favorable for the development of cramps may need modification in some instances, but is usually adequate and satisfactory. The belief that the elimination of protein from the diet is desirable for men working in a hot environment is widespread. There is little evidence to support this. The desirability of an adequate meat intake is obvious for men doing hard physical labor. A large proportion of carbohydrate foods may supply the remaining necessary calories. Of equal

importance in the prevention of cramps is an adequate mineral intake. An average intake of at least three teaspoonsful a day is probably necessary for men doing hard work in the summer.

A *liberal fluid intake* is imperative for workmen losing several quarts of fluid in the sweat each day. The temperature at which water should be consumed may be governed by the desires of the workmen. There is no evidence that cool water is of itself harmful. There should be no attempt made to restrict the ingestion of fluid, the only proviso being that the fluid intake be accompanied by an adequate amount of salt.

The *ingestion of salt* for the prevention of heat cramps is theoretically sound and is beneficial when practiced. Since the cause of cramps is essentially a loss of salt in the sweat and urine which is greater than the intake, the increased consumption of this substance will prevent this negative balance. The salt may be given in dilute concentration in the drinking water, dispensed in compressed tablets, or taken with meals. These are mentioned in the order of their efficacy. The addition of salt to the food is neither regular nor reliable. The craving for salted foods is not a dependable criterion of a low salt reserve in the body. Many men are prejudiced against the liberal use of salt at the table or have no taste for it. Occasionally meals are skipped and no salt is taken. The dispensing of salt in compressed tablets at the drinking fountain has been tried extensively in the Cleveland district with highly satisfactory results. There are, however, certain objections to this method of prevention. The ingestion of the tablets is optional with the men. Many men who need salt are prejudiced against its use in this form. Salt tablets are not palatable and frequently tablets are swallowed which are not digested and, therefore, are ineffective.

The general administration of salt in amounts sufficient to protect against cramps can best be achieved, in our opinion, by its addition to drinking water. In Youngstown various salt concentrations were tried in the drinking water during the summer of 1934. It was found that the concentration of choice was about 0.1%. Such a dilute salt solution may be taken cool, and if swallowed rapidly it has not a perceptible salty taste. This solution allays rather than promotes the sensation of thirst.

The practical application of these physiological deductions was instituted in the Youngstown Sheet and Tube Company during the summer of 1935. Previous to this time most of the heat cramp patients came from the Sheet Mill at the Campbell plant. In the spring of 1935 a salting machine was devised for salting the drinking water supplying this mill. During the hot weather in the following months no heat cases came from this department, while other departments not supplied with salted drinking water furnished a number of patients. This one experience is very gratifying. A longer period of trial in other plants is needed before we can accept this result without reservation. The tendency to be overenthusiastic should be checked by the desire to increase the number of our observations many fold.

The hazards to be considered from the general salting of the drinking water for large groups of men are probably not significant. A workman with kidney disease, heart disease, or any condition in which dropsy may be a symptom, is infrequently found in the industries where cramps are common. It seems unlikely that any harmful

effects are to be anticipated where the men are physically able to perform hard work and to sweat profusely. The advantage of supplying salt to the men in this fashion would be obvious. If a man allows his thirst to be quenched with fluid of this salt concentration, he is replacing salt and water at about the same rate as he loses them in the sweat. In this way the normal internal environment of the body is maintained, allowing meanwhile for the adequate dissipation of heat by sweating. If a man sweats then he will drink, and if he sweats it is advisable that the fluid and salt lost be replaced quantitatively. In no other way can this be done as conveniently as in the salting of the drinking water. If the men allow their thirst to be the guide for the consumption of salted water, there will be no accumulation of either salt or water in the body. Thus in the winter or at cooler jobs when the sweating is diminished, thirst will be less and the intake of salted water diminished. Therefore, it seems unnecessary to discontinue the salting of water in the cooler months when the ingestion of fluid is below that at other times.

Conclusion

This completes the argument. It may be stressed that heat cramps is essentially an occupational disease, and an industrial hazard is created by the association of hard work, high temperature, and profuse sweating. This investigation is an example of the treatment of a single problem of industrial medicine. Many others exist throughout industry. Their solution is dependent both upon general research in the field and upon a logical approach to specific problems, such as heat cramps. Many such problems remain in the fields of Industrial Fatigue, Industrial Toxicology, and Traumatic Surgery. Only through the active coöperation of industry, as in the present instance, can investigations of this type be made to yield well-tested and decisive results.

GROUP INDUSTRIAL MEDICAL SERVICE FOR SMALL PLANTS

BY TOM LILLEY

INDUSTRIAL medical practice in large manufacturing plants has developed rapidly in the United States, especially since the end of the World War. Though its development has been relatively limited for small manufacturing companies, several experimental group industrial medical units have been formed within the last ten years in an attempt to make available to a number of small plants industrial medical service comparable to that provided by many large companies.

It is the purpose of this article to inquire into the nature of these experimental units and to estimate their potential utility. First, the adequacy of industrial medical service as now typically provided by small plants will be considered relative both to the service provided in large plants and to the service considered adequate by industrial medical authorities. Secondly, the ability of group industrial medical service units to provide adequate medical service economically to small plants will be considered. Lastly, an analysis will be made of the practical limitations to the use of group industrial medical service.

The Adequacy of Present Industrial Medical Service

The first workmen's compensation law was passed in 1911 in the State of Washington. At present, 44 states have workmen's compensation laws, most of them requiring the employer to assume responsibility for wage losses and the cost of medical care to such of his employees as are injured while working for him. Recently, by additional statutes and administrative decisions, employers in many states have also been made responsible for employee victims of industrial diseases, thus in reality bringing the workmen's compensation laws very close to a form of compulsory health insurance.

Large and Small Plants. Under the spur of such legislation, the large manufacturing concerns of the country have been remarkably successful in reducing the number and severity of industrial accidents in their plants. Aggressive and competent health service, both preventive and curative, has been the major weapon in their hands, and they have become remarkably skilled in its use.

Small manufacturing plants, on the other hand, have had very high accident rates relative to the rates in large plants. This is due in part to the fact that employees in small plants have diversified duties and, therefore, cannot be so thoroughly trained in the skillful and safe performance of particular jobs. This diversification can be accepted only as a factor affording small plants an inherent tendency toward relatively high accident rates.

A major cause of the poor accident record in small plants, however, is the extent to which these plants have lagged behind the large concerns in the use of industrial medical service in aggressively combating industrial injuries. The expenses of medical departments are almost as high for small companies as for large, and, when

spread over a relatively small number of employees, such departments are found to be too costly. Thus workers in small plants are exposed to injury more frequently and are less likely to obtain skilled medical care when injured. The companies themselves pay dearly for these accidents in the form of higher compensation insurance premiums. The result is satisfactory to neither the employers, the employees, nor the public interest.

Comparative statistics on the medical services used in various sized plants makes evident the wide disparity between the service provided by large plants and by small plants. Table I shows the results of a study of industrial medical service in 925 plants, made by the American College of Surgeons between 1931 and 1933. Despite uneven sampling in the different size groups, the bias is in favor of the small plants because the "surveys in this group were largely directed to those plants that were considered to have an organized medical service."[1] Nevertheless, the services provided by large concerns are uniformly more adequate than those provided by the smaller concerns. Eighty-seven per cent of the plants with less than 250 employees have physicians on call; only 2% have full-time physicians. Thirty-six per cent of the plants with more than 1,000 employees have full-time physicians and 55% have part-time physicians. Only 31% of the smallest plants require preëmployment physical examinations, compared to 73% of the largest plants. Of the smallest plants, only 33% have medical records considered adequate by the American College of Surgeons, compared to 79% for the largest plants. While these comparisons do not cover all of the activities of medical departments, they give a sufficient comparison of the relative merits of medical service in small and in large plants.

TABLE I

Medical Facilities Provided in Industrial Establishments by Size of Establishment, 1931–1933

		Distribution of Physicians			*Having Preëmployment Physical Examinations*		*Percentage with Medical Records Considered Adequate*
Number of Employees per Company	*Number of Companies Surveyed*	*Full-time*	*Part-time*	*On Call*	*Routine*	*Special Groups Only*	
1–249	61	2%	11%	87%	31%	0%	33%
250–499	137	9	35	58	50	0	53
500–999	233	14	42	45	57	−1	54
1,000 and up	494	36	55	20	73	3	79
Total	925	24	46	36	63	2	66

Source: American College of Surgeons, *Medical Service in Industry and Workmen's Compensation Laws*, 1934, pp. 8, 14, 19.

As far back as 1922, Dr. W. Irving Clark, an authority in the field, listed the minimum medical needs of industrial plants. They are:

1. Knowledge of the physical condition of employees at the time of hiring.
2. Knowledge of physical ability of the employee to carry on the work to which he is assigned.
3. Provision of sanitary working conditions, including light, heat, and ventilation.
4. Safeguarding the employees from special health hazards peculiar to the industry.

[1] American College of Surgeons, *Medical Service in Industry and Workmen's Compensation Laws*, 1934, p. 10.

5. Advising and giving emergency or simple treatment to sick employees.
6. Giving prompt and adequate treatment in case of accident.[2]

It will be noted that the first five of the six listed needs are for preventive, not curative, services, and even the sixth need is largely for a preventive service. Physical examinations, sanitary protection, and safety protection are directly aimed at the avoidance of accidents. And prompt and adequate first aid is accepted as the most effective possible method of preventing simple cuts and bruises from leading to infection and lost-time accidents. It has been estimated by the American College of Surgeons and by Dr. Carey P. McCord, Medical Director of the Industrial Health Conservancy Laboratories, that the time lost by injuries in small plants could be reduced at least one-third by prompt first aid treatment administered by an adequately organized medical service.[3]

Methods of Meeting Industrial Medical Needs. The inadequacy of medical service provided by small plants is particularly glaring in those cases in which the plant employs a physician on call. This type of service is frequently used by small plants; it often simply means that in case of a severe emergency accident or a condition in the plant which the plant manager considers unsanitary or dangerous, the physician is called in. No systematic, regularized medical service is provided. The result is that, except for services that untrained business executives consider necessary or services provided under pressure from insurance companies, preventive needs—the real needs to be met by industrial medical service—are left unheeded.

A much better, but still inadequate, type of medical service is provided by a number of other small plants. The 11% of the 61 small plants referred to above which employ a physician on part time are representative of this type of service. In the best of this type of plant, a small dispensary is supplied at the plant and either a trained nurse or one of the employees, trained by the physician, is placed in charge of all minor first aid treatments. The physician, in almost every case a general practitioner or staff member of a local hospital, visits the plant at certain times during the week to care for more serious cases and, when it is desired, he makes physical examinations and surveys of sanitary conditions in the plant. He is on call for emergency injury cases. This plan clearly leaves much to be desired.

At present, industrial medicine is a specialized branch of the medical profession, not to be adequately administered by business executives, mechanical engineers, or even well-trained practitioners of general medicine. The American College of Surgeons, after a careful study of the field of industrial medicine, listed, along with other qualifications of a professional nature, the following desirable qualifications of industrial physicians:

> He should have a general knowledge of industrial relations, including employment methods, special problems relating to the employment of women and children, recreation, transportation, housing and educational facilities and methods, and employees' benefit plans.

[2] *Health Service in Industry.* New York: The Macmillan Company, 1922.
[3] American College of Surgeons, *Medical Service in Industry and Workmen's Compensation Laws*, 1934, p. 21.

He should have a knowledge of the ingredients and of the toxic or disease-producing nature of all the materials and processes used in the industry and of applied preventive medicine in general.

He should have a knowledge of the diagnosis and treatment of occupational diseases.

He should have a knowledge of sanitation, of working conditions, and of accident prevention methods.

He should be competent in the diagnosis and treatment of all traumatic lesions which he undertakes to treat.

He should be versed in procedure for follow-up and rehabilitation.

He should have a knowledge of the compensation laws involved and of an efficient record system including statistical methods.

He should have an unbiased industrial viewpoint and a confidence-inspiring personality.[4]

The physician called in by one plant and devoting most of his time and energy to his regular practice obviously cannot be expected to possess such qualifications. Yet it is precisely by the employing of men so qualified that the essential medical need, the need for preventive health service, is met. Thus the employment of an unspecialized physician on part time, however skilled that physician may be in the practice of general medicine, does not meet many of the more important medical needs of small plants.

The result of the inadequate medical service typically provided in small plants is eloquently summarized in two studies made by the National Safety Council. In a study of 3,804 industrial establishments in 1930, the council found that, relative to hours worked, there were more than twice as many lost-time accidents in plants having less than 100 employees as there were in the larger establishments employing more than 1,000 men. The severity rate for establishments of less than 100 employees was 61% higher than the rate for establishments of more than 1,000 employees. Table II shows both the frequency and severity rates for various sized plants in 1930. In 1932, the National Safety Council, in a study of 2,340 companies, divided the firms into three groups: large, middle-sized, and small firms. The small plants had a frequency rate 60% higher than that of the large plants, and a severity rate 25% higher.[5]

TABLE II

INDUSTRIAL INJURY RATES BY SIZE OF FIRM, 1930

Number of Employees per Company	*Injury Frequency Rate*	*Injury Severity Rate*
1–99	31.4	3.03
100–249	26.9	2.09
250–499	25.5	2.02
500–749	22.0	1.91
750–999	20.2	2.01
1,000 and over	14.8	1.88

Source: National Safety Council, *Industrial Accident Statistics*, 1931, p. 8.

The importance of the high accident rates in small manufacturing concerns becomes fully apparent when it is realized that in 1929, 75.9% of the total number of employees in manufacturing industries were in plants which had less

TABLE III

WAGE EARNERS IN MANUFACTURING ESTABLISHMENTS CLASSIFIED ACCORDING TO NUMBER OF WAGE EARNERS, 1931

Number of Employees per Company	*Number of Companies*	*Wage Earners Average for Year*	*Wage Earners Percentage of Total*
No wage earners	7,426		
1– 100	186,780	2,581,578	29.2
101– 250	10,195	1,589,040	17.9
251– 500	3,840	1,331,145	15.1
501–1,000	1,722	1,176,991	13.3
1,001 and over	996	2,159,989	24.5
Total	210,959	8,838,743	100.0

Source: U.S. Department of Commerce, Bureau of Census, *Manufactures: 1929*, Vol. I, p. 62.

[4] *Ibid*, p. 7.

[5] National Safety Council, *Accident Facts*, 1933, p. 29.

than 1,000 employees and that 47.1% of the total number of employees were in plants which had less than 250 employees. The number of employees working for manufacturing concerns of various sizes is shown in Table III. Thus it is evident that a majority of wage earners in the manufacturing industries of the United States are working in plants in which adequate prevention of accidents and the care of workers who have been injured are least practicable.

Services Provided by Group Industrial Medical Units and Their Cost

To meet the need for more adequate medical care for small plants, group medical service units have been established in a number of American cities. While the various units differ markedly in many respects, they all have the common features of collecting medical personnel and equipment, offering the use of this personnel and equipment to a number of plants, and prorating the costs of the service to the various plants on some equitable basis. These group units are considered by some authorities as the logical answer to the medical needs of the small plant. However, group service plans are still small in number and many of those established are still essentially in the experimental stage. Several problems remain to be solved before group service can be considered as a practicable solution to the small plant's problems. Can group units really provide adequate medical service? Can they do so at a cost which makes such units economically feasible? What are the practical limitations to the use of group units in the United States? Light is thrown on many of these problems by consideration of the nature of the services offered by an outstanding set of group units which have been established in the recent past.

The initiative in establishing group industrial medical units has been taken by different interested parties in different cities. Insurance companies have organized relatively complete medical service units in several American cities. Outstanding examples are those in Jamestown and Rome, New York. In other cities small manufacturers themselves banded together to establish medical units. A group of ten musical instrument manufacturers in New York City, all located in one neighborhood, established such a unit. Some of the most successful group medical service has been provided by private industrial clinics, organized by physicians and surgeons in such cities as New York, Chicago, Detroit, San Francisco, Los Angeles, and Toledo. In other cases outside agencies, such as the National Tuberculosis Association, took the initiative in organizing industrial medical units.[6]

In this article, only one set of these units will be considered in detail, the units established in Philadelphia by the Philadelphia Health Council and Tuberculosis Committee. The functions performed by these units were more complete than those performed by many of the other units. Nevertheless, the industry in which the Philadelphia units were established was sufficiently typical of the usual industrial environment in American cities, so that a study of these units will illuminate the potial usefulness of similar units and will avoid a repetitive enumeration of the services provided by substantially similar units elsewhere.

[6] For a more complete summary of the services offered by the group units other than the Philadelphia units, cf. National Industrial Conference Board, *Medical Supervision and Service in Industry*, 1931, pp. 58-64; also Julius Rosenwald Fund, *New Plans for Medical Service*, 1936.

The Philadelphia Industrial Health Units. In 1926 the Philadelphia Health Council and Tuberculosis Association began an extensive program to test the feasibility of group medical practice in industry. Plants employing less than 500 men were eligible to join the group service units which the Committee established. Groups of two or more plants located in the same neighborhood were organized into Industrial Health Units. During the course of its history, thirty-two such units were organized. Rather than organize all subscribing plants in the city into one large group, units of relatively small size were chosen in order to permit each group to serve only plants located geographically close together and also in order to permit one public health nurse to serve a complete unit.

To be eligible for the service, each subscribing company was required to set up and equip a simple dispensary in its plant. The cost of equipping the dispensary ranged from $100 to $400. Under the direction of the central tuberculosis committee, a properly trained and experienced physician and a registered public health nurse were assigned to each unit. They spent a portion of their time in each plant, the amount of time being dependent on the number of employees. A minimum of one hour of physician's service and two hours of nurse's service per week was required for each 100 employees.

The first services rendered to the plants of a newly formed unit were health examinations of all employees willing to be examined and a sanitary survey of each plant. Thereafter, preemployment physical examinations of employees having physical defects, and annual examinations of all employees in the subscribing plants, were made. One or several employees in each plant were trained in simple first aid treatment technique. These employees cared for all minor injuries which occurred when the nurse or physician was not present. The nurse and physician cared for more serious cases, either on emergency call or on their regularly scheduled calls to the plants. Minor illnesses occurring at the plants were also treated. Advice was given regarding all defects shown up by the examinations. Home visits were made by the nurse when necessary. The unit staff coöperated with the family physician of sick, injured, and defective employees, and made a follow-up of all compensable cases. Sanitary supervision of the plant, including an annual survey of the plant, was provided. Campaigns in health education and instruction in personal hygiene were held. In brief, each unit, on a part-time basis, provided services similar to those provided by the medical departments of large manufacturing concerns.

It was the plan and practice of the Tuberculosis Committee to turn the individual industrial health units over to the member plants after they had been functioning for a year or two. The service was continued as it had been under the committee, with each plant paying its *pro rata* share of expenses.

From this brief *résumé* of the functions which these industrial units have performed, two conclusions can be drawn. The first is that, under certain conditions, adequate industrial medical service can be furnished to small plants by group service units. This does not mean that adequate service can be provided by group units under all conditions or that adequate service will be provided by each. The information available is far too limited to draw any such sweeping conclusion. However, the fact that adequate medical service

can be provided under certain conditions has been demonstrated by the Philadelphia units. Every need of industrial plants listed above has been met by these units. Even though each plant was served only on a part-time basis, the number of hours of medical service per employee was comparable to the number of hours of service provided by large plants. The service, moreover, was provided by experienced industrial physicians.

Secondly, the experience of the Philadelphia units has shown that, under some conditions, adequate industrial medical service can be rendered to small plants at a cost comparable to that which large manufacturing concerns incur in providing similar service. Again, the inference is that adequate medical service can be provided economically under certain circumstances, not that it will be provided under all circumstances. The average cost to the Philadelphia plants of medical and nursing services was $4.50 per employee per year. Table IV shows the costs of minimum industrial medical service to a number of plants employing 1,000 or more men, as determined by a study made by the National Industrial Conference Board. The average cost for 125 plants was $4.72 per employee per year, which compares favorably with $4.50 per employee per year, the cost to the Philadelphia plants. This figure does not necessarily indicate that the Philadelphia group service was basically less expensive to operate than the service provided by the 125 large plants. Possible differences in costs included in the computations and possible differences in the services offered make the contrary presumption more probable. However, with due allowance for these factors, it is nonetheless true that the cost of medical service to the small Philadelphia plants was of the same order of magnitude as the cost of medical service to typical large plants.

TABLE IV

COST OF MEDICAL SERVICE BY SIZE OF ESTABLISHMENT,* 1930

Number of Employees per Establishment	*Number of Companies Reporting*	*Total Number of Employees*	*Total Cost*	*Cost per Year per Employee*
1,000–1,499	46	55,792	$ 317,565.43	$5.69
1,500–1,999	24	40,847	219,196.61	5.37
2,000–2,999	15	36,985	188,884.38	5.11
3,000–4,999	20	74,370	362,581.43	4.88
5,000–9,999	12	88,250	289,615.14	3.28
10,000 and over	8	124,122	603,046.92	4.86
Total	125	420,366	$1,982,889.91	$4.72

* The medical service included in this table consisted of minimum equipment of a well stocked dispensary and minimum personnel of a full-time hospital-trained nurse. All costs of the medical department were borne by the employer.

Source: National Industrial Conference Board, *Medical Supervision and Service in Industry*, 1931, p. 90.

Limitations to the Use of Group Industrial Medical Service

Though group industrial medical service units can provide medical service to small plants which is comparable to the service provided by large plants at an approximately comparable cost, there are certain practical limitations to the use of group industrial medical service in small plants.

An obvious limitation is that, in order to make group service practicable, the plants served must be geographically close together. This excludes the possibility of the use of group service by plants in isolated communities or in isolated sections of larger communities.

The use of group service units is also limited by the fact that it takes aggressive leadership on the part of some interested individual to form such a unit. To be willing to exercise such leadership, he must have a real faith in the benefits to be derived from adequate medical service, and must be willing to sacrifice time, energy, and even money in order to obtain the coöperation of other interested parties and to establish the unit on a working basis. Not a little of the credit for the success of the Philadelphia units was due to the centralized promotional effort which the tuberculosis committee provided in establishing the units.

Conflict of Interests. Indeed, the major limitations of group industrial medical service are not technical or economic but human limitations. Logical as the group service idea may be, the fact is that such service is not a direct answer to the problems of small industrial plants, but merely a statement of a new and equally disturbing problem that small plants must solve before the solution of their ultimate problem of lowering accident rates may be attained: namely, the problem of organization. It is the problem of organizing social groups with widely diverging points of view into a single unit to fulfill a single purpose. As pointed out above, four social groups have a vital stake in a group industrial medical plan: the member employers, their employees, the medical profession of the community, and the compensation insurance carriers—all with widely different interests, habits of thought, and emotional prejudices. These must cooperate. If each of the parties is willing, the plan, economically sound in the abstract, has an excellent chance of success. If any one of the parties knows (or, just as important, if it believes) the group plan is contrary to its interest, the plan will inevitably fail in the long run. It is, therefore, wise to consider what the interests of the four parties are.

The major demand of the employers is that the costs of group medical service will be lower than the benefits received. The experience of numerous large manufacturing concerns has demonstrated that the benefits of adequate medical service clearly do outweigh the costs. And it has been seen that group units can, within their physical limitation, provide adequate medical service at a reasonable cost. However, if a group unit is to be formed, it is not only necessary that this be so; it is necessary also that the employer believe it is so. It is furthermore necessary that the employer be willing to coöperate with employers in neighboring plants.

The demands of employees are also exacting at times. Their major demand is, or should be, that the best possible medical service be provided. This is in accord with the major demand of the medical profession, but it often runs afoul of the demands of short-sighted employers and insurance companies, who, in their quest for low-cost medical service, forget that a bargain in low quality medical service will be expensive. Labor groups also demand that the physicians be allowed to act independently on a purely professional basis. Attempts to use preëmployment examinations as a pretext to avoid hiring men known to have union sympathies, or attempts to send employees back to work before they are completely cured from some compensable accident, are especially repugnant to labor. It is to the employees' interest and, indeed, to the public interest, that

the physician be given complete responsibility for all professional decisions and that a physician who will administer his duties on a purely professional ethical basis be secured. Again, it is necessary not only to have these conditions obtain but also to convince employees that they do obtain.

Medical Professional Standards. An attempt to organize a group medical service which runs directly counter to the standards of the medical profession is doomed to incompetency or failure. If the service unit does not measure up to these standards, skilled members of the profession will refuse to belong to the unit, ill-feeling will be stirred up among the members of the profession in the community, and close coöperation with outside hospitals, essential to the successful functioning of the group, will be lacking. Hence it is important that every group unit should know what the demands of the medical profession are and that it should measure up to these demands.

The initial demand of the profession is that the quality of medical service should not be lowered. Employment of physicians on a purely price basis, with severe competition and underbidding for the job, will inevitably reduce the standards of service, and will therefore meet strenuous opposition from the organized medical profession. Again, the profession demands that company-employed physicians shall not use their industrial position to build up a large private clientele. Aside from purely industrial health cases, the employees should be free to go to their family physicians and should in no way be coerced into using the services of the industrial physician for non-industrial illness.

This demand of the profession is closely linked with another major demand, namely, that industrial health units should limit their work to industrial cases in all communities where there are adequate facilities to care for non-industrial cases. It is quite probable that communities large enough to have a number of small plants are large enough to have adequate medical and hospital facilities. While there is some evidence that this demand may some day be modified, at present the medical profession holds, with considerable justification, that industrial health units which provide non-industrial medical care or hospitalization are competing with existing general medical practice, and are using their position in the manufacturing concerns to force employees to use their service. It is wise, then, in practically all group industrial medical units, to limit the services rendered to purely industrial health services. Even on industrial cases, it is usually wise to use outside hospitalization.

Of course, in this case also, it is necessary to convince members of the medical profession in the community that the group is meeting its demands after the group actually does so.

The interests of the insurance carriers practically coincide with those of the employers. The position of the insurance carriers is slightly different, however, in that in most cases they are not directly injured by discontent among the employees, and hence they are likely to be less informed regarding the employees' point of view. Insurance companies experienced in carrying workmen's compensation policies, however, more than compensate for this lack of direct contact with employees because their experience in the field gives them a knowledge of

industrial medical service which few employers possess.

The Future of Group Units

The foregoing analysis has indicated that there are certain physical limitations to the use of group industrial medical units. In view of the varied interests of the four parties which are involved in any group unit, it is obvious that there are certain human limitations as well to the use of such units. The minimum requirements of a typical industrial medical unit might be stated as follows:

1. Member plants must be located geographically close together.
2. The organization of the group must be accomplished by an aggressive leader who knows the importance of providing medical service of the best quality.
3. The industrial physician chosen for the unit should be experienced and trained in industrial medicine, and, if fundamental difficulties are to be avoided, he must know and meet the ethical standards recognized by the medical profession. He must be placed under no coercion, either from employers, insurance companies, or employees, to make professional decisions on any basis other than a purely professional one.
4. The industrial medical services provided should, if possible, include all of those necessary to meet the medical needs of small plants, but should not include treatment of non-industrial accidents and illnesses or hospitalization, unless special circumstances make such services necessary.

The feasibility of group service as an answer to the industrial medical problems of small plants depends largely on the ability of society to meet these minimum requirements. The physical prerequisite that plants must be located close together definitely limits the practicable use of group units to industrial areas in cities of considerable size. Thus group service is not a panacea or a solution to the medical problems of all small plants, but a type of medical service organization which can be used in urban areas by a limited number of plants.

Beyond this, the feasibility of group service as an answer to the medical problems of this limited number of plants depends largely on the ability of the four major parties at interest to coöperate. It is undoubtedly true that most of the differences in point of view among the four parties would disappear—as always—if all of the parties would take a sufficient long-time view of the problem. When employers are willing to coöperate with employers in neighboring plants, when employers and insurance carriers realize that the best quality of medical service will render maximum benefits in the form of lower accident rates, when the medical profession loses its traditional mistrust of business and coöperates fully in training men for specialized industrial medical practice, and when employees cease mistrusting both employers and physicians in respect to such practices, the major grounds for controversy will disappear. A statement of the desiderata is simple; attainment involves a change in the mental and emotional habits of the groups concerned.

DEPRECIATION POLICY AND FINANCIAL STRUCTURE IN AMERICAN RAILROADS

BY HAROLD D. KOONTZ

ALTHOUGH the Interstate Commerce Commission is putting into effect regulations extending mandatory depreciation accounting in American railroads over road and structures accounts, little attention has been given to the depreciation problem. Often dismissed as merely an accounting matter, the question of depreciation allowances is frequently given insufficient weight in considering the present railroad situation. Railroad financial difficulties, on the other hand, have caused wide concern, especially in recent years. These difficulties have usually been explained in terms of external factors, notably competition of other transport services, and there have been attempts to make adjustments on this score. It may be questioned whether enough consideration has been given to various internal factors. Among them, one of the most important is the debt-burdened financial structures of the carriers; and, while the existence of a relatively large portion of long-term debt cannot be explained in terms of depreciation policy alone, the practice of the railroads respecting depreciation has affected—as we shall see, for the worse—the present character of railroad financial structure.

Any business enterprise expecting to operate over a long period of years without encountering violent fluctuations in business, changes in demand for services, and progress in the mechanical arts, is indeed looking for the impossible. One would hardly place the American railroads in this category, for it seems fairly clear that the railroads have developed more and more efficient transportation with the advance of progress and the changing of demand. In general, however, the railroads have made provision for these inevitable changes by a replacement policy. So long as business is successful and changes are not too extensive, this policy appears to be adequate. When, however, the railroads are faced with changed demands as at present, involving high-speed passenger transportation and cheaper and more complete freight carriage, and at the same time have to deal in some quarters with financial bankruptcy, the adequacy of a replacement policy is quite questionable.

Not that the railroads have relied entirely on a policy of charging replacements to current expenses as those replacements are made. Until the accounting classifications of 1907–1914,[1] the Interstate Commerce Commission did allow the railroads to account for depreciation of property due to any cause by the replacement or renewal method. Whether the commission favored this method over the two decades of railroad regulation from 1887 to 1907 is difficult to say. It is likely that in the early part of this period the commission thought little about the problem of depreciation, so firmly intrenched was the idea of replacing units when retirement became necessary and of charging

[1] Interstate Commerce Commission, *Classification of Operating Revenues and Expenses*, Issue of 1914. In 1907 the commission prescribed a plan for depreciation on equipment, but the comprehensive plan of accounting classifications was not completed until 1914.

the replacement cost to operating expenses. On the other hand, even if the commission had desired to formulate depreciation accounts, it was probably without the authority to do so before 1906.[2] At any rate, the commission made no mention of depreciation accounting itself until 1907.

In its quest for an accurate basis upon which to calculate reasonable rates, the commission came to realize in 1907 that "the integrity of net revenue statements published by the carriers" makes "formal depreciation charges . . . essential." As a result the commission declared that "the most important single purpose of Congress in conferring . . . authority to prescribe and supervise a uniform system of railway accounting"[3] would be fulfilled if depreciation accounts were included in the uniform system.[4] After this declaration by the commission in favor of such depreciation accounts, which was in essence a declaration in favor of depreciation reserve accounting, there is no evidence that the commission ever wavered from this position in respect to its accounting provisions. To be sure, the classifications of 1907–1914 required that the railroads accrue reserves on equipment only. But provision was made by the commission that, optional with the carrier, depreciation reserves might be accrued on road and structures.

The optional requirement with regard to road and structures should not have been taken by the carriers as an indication that the commission was not completely committed to depreciation reserve accounting. The very fact that in its valuation cases, beginning with the Texas Midland case,[5] the commission consistently deducted depreciation, against the argument of the railroads that depreciation did not exist where their properties were fully maintained, is ample evidence that the retirement and replacement methods of accounting for the loss of service life were not in line with the commission's depreciation principles. The railroads would have done well to regard the compulsory aspects of depreciation reserve accounting for equipment as an indication of future commission policy. The probable reason for making depreciation accounting for fixed property optional was that the commission, realizing that the induction of depreciation reserve accounting was a radical change for the roads, wished to give the carriers opportunity for gradually becoming accustomed to depreciation accounting.

The complete adoption of depreciation reserve accounting was not made by the commission until 1931. At this time, the commission made public its final report and order respecting depreciation charges for steam railroads

[2] Although the Act of 1887 (sec. 20, 24 U.S. Stat. Laws, p. 386) said that the commission "may . . . prescribe . . . a period of time within which all common carriers subject to this Act shall have, as near as may be, a uniform system of accounts," the commission felt that this language of the act was too indefinite. See 9th Ann. Rep. I.C.C. 111 (1895). The lack of confidence in the authority of the act of 1887 to give the commission power to require uniform accounting probably arose as a result of the cases in which the commission's attempts to gain conformity with other orders met with rebuff by the Supreme Court. See, for example, *Counselman* v. *Hitchcock*, 142 U.S. 547 (1892).

[3] 21st Ann. Rep. I.C.C. 141 (1907).

[4] The authority as conferred by the Hepburn Act of 1906, 34 U.S. Stat. Laws 584.

[5] 75 I.C.C. 1 (1918). In discussing depreciation in this case (pp. 125–130), the commission stressed the fact that depreciation occurs gradually with the dissipation of service life, thus indirectly indicating a preference for depreciation reserve accounting. In every other valuation case, the commission followed the principles of the Texas Midland. One should note in this connection that the commission's concept of depreciation includes not only losses resulting from age and wear, but also from obsolescence, inadequacy, and acts of public authority.

and telephone companies.[6] Just as the railroads had opposed the mandatory provisions respecting reserve accounting for equipment in 1914, they opposed the extension of these depreciation requirements to practically all classes of property in 1931. Throughout the period of hearings and rehearings from 1923 to 1931, the railroads put up a united front against making obligatory depreciation reserve accounting in road and structures accounts. A substantial part of this opposition was based upon the commission's proposal for adjusting the balance sheet to take account of past depreciation.

Railroad Opposition to Depreciation Reserve Accounting

To the business man accustomed to making allowances for depreciation of his property from year to year, and to those who have followed the liberal policies of the telephone companies in charging depreciation, the opposition of the railroad managements to depreciation reserve accounting may seem strange indeed.

Several factors may aid an appreciation of, though not necessarily an agreement with, the position of the railroad managements. In the first place, one should realize that the railroad industry had practically reached its maturity when depreciation accounting came to be recognized widely as wise business practice. There is little evidence in financial reports of businesses in general that the loss of service life through age, wear, obsolescence, inadequacy, or other factors—that which we now call depreciation—was handled to any notable degree by reserve accounting prior to 1900, or even 1910. By this time the railroad industry was fairly completely developed and accustomed to a method of charging replacements directly to operating expenses.

Moreover, some explanation for the point of view of railroad management may be found in their concept of depreciation itself. While they would admit that individual parts have terminable lives and must be replaced, they conceive of their property as a composite of many parts and, as such, the composite property does not depreciate so long as it is well maintained. In other words, the railroad as a composite of units is permanent; and so long as it is maintained at a high level of efficiency, depreciation *in fact* does not exist.

Further explanation for this opposition may be traced to the stand taken by the carriers in the railroad valuation cases. During all the years prior to the time of the Valuation Act in 1913, no significant attempt had been made by the roads to account for accruing depreciation. To concede that accrued depreciation (beyond deferred maintenance) existed would be to acquiesce in a lower fair value for rate-making purposes, and hence threaten one of the bases for supporting higher rate levels than would be the case if the existence of accrued depreciation were admitted. Having taken this position to protect themselves against a depreciated rate base, consistency would not allow the managements to admit the need for depreciation reserve accounting.

One of the most persistently advanced arguments of the railroads is that depreciation reserve accounting is not necessary where replacements tend to assume a constant rate in a property which has "struck its gait." Since

[6] Depreciation Charges of Telephone and Steam Railroad Companies, 177 I.C.C. 351. The effective date of this order has been postponed several times to allow for preparations by the carriers.

operating efficiency can be maintained through the replacement of units by charging the cost directly to operating expense, and since replacing units at a fairly regular rate each year does not tax the operating expenses of one year materially more than those of another, the railroads argue that accruing a depreciation reserve serves no practical use.[7] Consequently, a depreciation reserve is really a "luxury" for which rate payers should not be charged.[8]

Railroad Difficulties and Financial Structure

Since the prosperous days of 1929 the railroad industry has well deserved the pity shown it in the popular mind. Its apparent decadence has been the cause of much shaking of heads. With more railroad mileage in receivership or in the hands of trustees in 1935 than ever before, with a greater increase in mileage in receivership or trusteeship in 1935 than in any other year except 1893, and with this and other mileage supported by loans of nearly half a billion dollars from the Reconstruction Finance Corporation,[9] not much doubt can be expressed that all is not well in the industry.

While the cause of these difficulties has been ascribed largely to loss in traffic through business recession and competition of bus, truck, and private automobile, too often other significant causes are overlooked. One such cause is the financial structure of the carriers. Fixed charges in the form of leased line rentals also play a part in the difficulties of the railroads—especially, for instance, in the case of the New Haven, included among the roads in Table I.

TABLE I

THE RATIO BETWEEN THE AMOUNT OF LONG-TERM DEBT AND THE SUM OF COMMON STOCK, PREFERRED STOCK, AND LONG-TERM DEBT

Class I Railroads	57%
Akron, Canton and Youngstown	71
Central of Georgia	75
Chicago and Eastern Illinois	43
Chicago, Milwaukee, St. Paul and Pacific	65
Chicago, Rock Island and Pacific	69
Denver and Rio Grande Western	63
Mobile and Ohio	87
New York, New Haven and Hartford	55
St. Louis—San Francisco	71
Seaboard Air Line	66
Wabash	45

Source: Data compiled from statistics in Interstate Commerce Commission, *Statistics of Railways*, 1933.

This table illustrates briefly the important part long-term debt plays in the capital structure of the railroads. Here is shown for the year 1933 the percentage of such debt to total capitalization (common stock, preferred stock, and long-term debt) for all Class I railroads except switching and terminal companies[10] and for certain roads in the hands of receivers or trustees, selected at random.

When one compares these percentages with the very small proportion of long-term debt prevailing in industrial

[7] Note that counsel for the railroads said in their brief to the commission in the course of the depreciation hearings: "The railroads, as a general rule, based upon their experience and long practice, believe that the most economical and at the same time accurate method of accounting for the maintenance cost involved in retirements is to charge it to operating expense as it is incurred." From *Exceptions and Brief of the Presidents' Conference Committee*, Docket 15100, "Depreciation Charges of Steam Railroad Companies," p. 31.

[8] One even hears this argument from such high places as the Supreme Court. Mr. Justice Butler, in his concurring opinion in the case of *Lindheimer et al.* v. *Illinois Bell Telephone Company, supra*, at p. 181, said: "The only legitimate purpose of the reserve is to equalize expenditures for maintenance so as to take from the revenue earned in each year its fair share of the burden. To the extent that the annual charges include amounts that will not be required for that purpose, the account misrepresents the cost of service."

[9] From an analysis by J. G. Lyne, "Bankruptcies Break Record in 1935," 100 *Railway Age*, No. 1, pp. 41–49.

[10] The Class I railroads operate approximately 93% of the total railway mileage in the United States and earn about 97% of the total revenues.

enterprises generally, one has in part an explanation for the widespread bankruptcies among large railroad enterprises as compared with the relatively few bankruptcies among large industrial concerns.

Even more convincing evidence of the importance of borrowed capital in the railroads' financial difficulties is given by the examination of the return before interest and dividends on the total assets[11] of the railways. Note that, sarily be taken as representative of industrial corporations generally, they serve to illustrate how companies, in which long-term debt is of little or no importance in their financial structure, can meet depressions with a greater degree of equanimity than would otherwise be possible. Had the railroads not had such high fixed interest charges to contend with, the 2.6% average return would have been fairly respectable for days of depression.

TABLE II

INCOME BEFORE INTEREST AND DIVIDENDS COMPARED WITH ASSETS

(1930–33 inclusive)

	Average Income before Interest and Dividends (000)	*Average Total Assets* (000)	*Percentage Return*
All Class I Railroads	$650,525	$25,475,400	2.6
Akron, Canton and Youngstown	359	11,895	3.0
Central of Georgia	1,789	98,563	1.8
Chicago and Eastern Illinois	2,232*	83,985	−2.6
Chicago, Milwaukee, St. Paul and Pacific	8,824	762,284	1.4
Chicago, Rock Island and Pacific	8,901	469,416	1.9
Denver and Rio Grande Western	4,661	222,881	2.1
Mobile and Ohio	21	60,205	0.03
New York, New Haven and Hartford	16,734	541,740	3.1
St. Louis-San Francisco	9,225	442,584	2.1
Seabord Air Line	1,860	277,672	0.6
Wabash	5,047	333,633	1.5

* Deficit.

Source: Data compiled from statistics in Interstate Commerce Commission, *Statistics of Railways*, for years mentioned.

in the years 1930 to 1933 inclusive, the rate of return on railroad assets averaged 2.6%. This percentage compares quite favorably with the 0.35% return on the assets[12] of the United States Steel Company, and with the average deficit before interest and dividends of the Westinghouse Electric Company of more than $7,000,000 annually during these same years. While these allusions to the depression experience of industrial companies need not neces-

Moreover, Table II indicates that, with one exception, none of the railroads shown in Table I failed to have on the average a balance before interest on long-term debt and dividends during the years 1930 to 1933 inclusive. All but two of the remaining ten roads showed an income before interest on long-term debt and dividends in 1931; in 1932, six of the remaining ten roads showed such an income; and in 1933, all of the remaining bankrupt roads showed

[11] This figure includes investments in road, equipment, and miscellaneous physical property, less depreciation reserves; investments in leased property; investments in affiliated companies, and other investments; current assets; and deferred assets. It was not thought feasible to separate investments in affiliated companies, since income from these companies cannot always be separated easily.

[12] This figure includes investments in plant and property, less depreciation reserves; investments in sinking funds *et cetera;* current assets; and deferred charges.

such income. During the period from 1931 to 1933 many large industrial enterprises earned little before interest and dividends and many such enterprises showed deficits. Yet few of the large industrial corporations were seriously threatened with bankruptcy, a fact which can largely be explained by their simple financial structures in which debt played such a small rôle. If one could overlook the stifling effect of fixed interest charges, one could conclude that even many of the now bankrupt railroads did rather well in the business depression.

Financial Structure and Depreciation Reserves

Obviously, the immediate cause of the widespread railroad bankruptcies lies for the most part in debt-burdened capital structures. But, it may be asked, what effect could a liberal depreciation policy have had for the railroads? No one would contend that the traditional opposition of railroad managements to depreciation reserve accounting is alone the cause of the present railroad difficulties, even in so far as they are related to the capital structure.

The part a more liberal depreciation policy might have played for the railroads has apparently not been realized generally by either the railroad managements or the commission itself.[13] A depreciation reserve policy, had it been carried out adequately, would have meant at first sight only an increase in the credit items of the balance sheet. The policy would have accomplished more, however, for at the same time that depreciation reserve had been credited, one of two alternative courses could have been followed.

In the first place, the railroad could have used the funds, arising from charging depreciation as an expense, for the purchase of more operating assets. New equipment or new or improved road would probably have been bought rather than leaving the funds in cash or in securities of another enterprise. With the purchase of more operating assets at the time the charge to depreciation might have been made, it might be argued that a depreciation reserve policy would not have helped the present situation since present difficulties are related in part to a lack of available liquid funds. Even if the funds had been used for the purchase of operating assets, the present financial situation would have been bettered. This accumulation of operating assets would have made it unnecessary during the development of the roads (even since 1910) to borrow as much capital through fixed interest-bearing securities. And this would have released much of the funds that now go for the payment of interest. In the second place, the railroads might have used the funds arising from the larger depreciation charges for the amortization of bonded indebtedness, with consequent diminution of fixed charges at a time when business should recede.

In either event, the result would have been a reduction in apparent net income and the restriction of some of the flow of dividends which were made at the expense of many a railroad investment. By keeping funds in the industry as property was consumed, railroad finances would have been to that extent

[13] The impression one gets from reading the report and testimony in docket 15100, *Depreciation Charges of Telephone and Steam Railroad Companies*, is that both the commission and the carriers emphasized problems respecting the existence of depreciation, the practicability of depreciation accounting, the necessity of charging depreciation to protect the "integrity of the investment," and interference of prescribed depreciation in the field of "managerial discretion."

improved and the roads would have been in a better position to meet competition of other agencies of transportation and changing demand and design, as well as the financial dangers of business depression.

Depreciation policy, or rather the lack of it, is perhaps more at the bottom of the present railroad crisis than is usually admitted. In so far as most railroads have been forced to raise much of their capital by borrowing, the problem of railroad credit at present is directly bound up with the failure to make depreciation charges in the past. By borrowing funds which might better have been recovered through depreciation charges, the railroads have been forced to face present competitive forces with an impaired credit. Competition cannot be met effectively, nor can modern efficiency and demand be met, unless the railroads have funds, or can raise funds easily, to buy new equipment and other fixed assets when needed. Moreover, much of the equipment, road, and structures which are obsolete or inadequate cannot be junked and retired unless the surplus and reserve accounts can absorb such charges. To reduce these all too small accounts now, however, would possibly mean further impairment of credit at a time when the debt-heavy capital structures of the railroads need the benefits of improving credit.

The inadequacy of depreciation charges in the past is apparent from the examination of the accounts of the carriers. As compared to reserves of many industrial corporations, the railroad reserves seem small indeed. Even though one realizes that depreciation has been accrued in almost all cases on equipment only, this realization cannot conceal the fact that the adequacy of depreciation reserves must be considered in the light of total depreciable property. For all Class I railroads the depreciation reserves in 1933 were only 12.5% of the total investment in road and equipment. Compare this with the 30.5% ratio of depreciation reserve to investment in property and plant of the United States Steel Company in 1931, the 47.8% ratio of the Westinghouse Electric Company in 1933, and in 1934 the 57% ratio of the American Chicle Company, the 32% ratio of the American Tobacco Company, the 53% ratio of the Chrysler Corporation, and the 44% ratio of the B. F. Goodrich Company.

TABLE III

INVESTMENT IN ROAD AND EQUIPMENT, AND DEPRECIATION RESERVES, 1933

	Investment in Road and Equipment (000)	*Depreciation Reserves* (000)	*Percentage of Reserves to Investment*
Akron, Canton and Youngstown	$ 5,557	$ 395	7.1
Central of Georgia	92,924	12,004	13.1
Chicago and Eastern Illinois	77,513	4,298	5.5
Chicago, Milwaukee, St. Paul and Pacific	721,098	35,215	4.9
Chicago, Rock Island and Pacific	378,291	49,785	13.2
Denver and Rio Grande Western	211,829	8,189	3.8
Mobile and Ohio	56,636	4,530	8.0
New York, New Haven and Hartford	357,930	52,613	14.7
St. Louis-San Francisco	417,255	39,640	9.5
Seaboard Air Line	236,982	15,231	6.4
Wabash	293,930	18,411	6.3

Source: Data compiled from statistics in Interstate Commerce Commission, *Statistics of Railways, 1933.*

Interesting also are the percentages of reserves to investment in road and equipment for the group of bankrupt carriers used in the tables above. Their sparing annual allowances for depreciation and their opposition to complete depreciation reserve accounting are all too apparent from the data for 1933 shown in Table III.

In fairness to the railroads, one should emphasize that the apparent inadequacy of depreciation reserves is due largely to the policy of accruing little or no depreciation on road or miscellaneous physical property. Data for 1934 show that, for all Class I railroads, against an investment in road of $13,785,800,000, the depreciation reserves were about $97,900,000, or 0.7%; against an investment of $173,400,000 in miscellaneous physical property, the depreciation reserves were about $7,600,000, or 4.4%; but against an investment in equipment of $5,383,00,0000, depreciation reserves were $2,362,000,000, or 44%.

Data for accrued depreciation are not separated in the statistical reports for the individual carriers mentioned above. In all cases but one, however, these railroads accrued depreciation on equipment only. In regard to this one exception the accrual (on bridges and like property) other than on equipment was a relatively insignificant amount. Hence, one can assume for purposes of illustration that the entire reserves accrued in the case of these bankrupt roads were accrued on account of equipment. If these reserves are applied to equipment only, the percentages of reserves to investment would obviously be much higher, as is indicated in Table IV, with data for 1934.

TABLE IV

INVESTMENT IN EQUIPMENT, AND DEPRECIATION RESERVES, 1934

	Investment in Equipment (000)	*Depreciation Reserves* (000)	*Percentage of Reserves to Investment in Equipment*
Akron, Canton and Youngstown	$ 1,385	$ 395	28.5
Central of Georgia	26,000	12,116	46.6
Chicago and Eastern Illinois	16,602	3,606	21.7
Chicago, Milwaukee, St. Paul and Pacific	117,447	37,717	32.1
Chicago, Rock Island and Pacific	124,307	51,173	41.2
Denver and Rio Grande Western	30,631	8,956	29.1
Mobile and Ohio	16,071	4,593	28.6
New York, New Haven and Hartford	102,148	55,073	45.8
St. Louis-San Francisco	92,683	42,283	45.7
Seaboard Air Line	53,443	16,253	30.4
Wabash	63,637	24,301	38.2

Source: Data from Interstate Commerce Commission, *Statistics of Railways, 1934.*

While these data show fairly good depreciation reserves on equipment, they also emphasize the extreme lack of such reserves on investment in depreciable property other than equipment. In 1934 investment in road was, on the average, more than two and one-half times that in equipment. Had reserves been accrued for road similar to those on equipment, railroad depreciation reserves would have been over six billion dollars larger. In other words, that sum would have been charged to operating expenses and would have been available for use in making replacements or in retiring long-term indebtedness. In either event, barring dissipation of funds through imprudent investment, the financial structure of the American railroads would not to-

day be burdened so heavily with long-term debt, nor would railroad managements have been faced with such an acute problem in meeting interest charges when revenues decline in times of depression.

To be sure, had the railroads embarked upon such a program of depreciation charges by 1910 or before, the payment of dividends might have been sharply curtailed. If revenues could not have stood the making of reasonable depreciation charges without foregoing dividends, restriction of dividends would seem to have been justified in the interests of sound finance. Once on a sound financial basis with a financial structure less weighted with debt, the payment of dividends would have been less subject to business fluctuations.

Some of the fault for the lack of reserves for depreciation in the past may rest with the Interstate Commerce Commission. There is little indication that the commission gave enough recognition to depreciation charges as a factor in rate making in the period when higher rates might have been charged by the carriers. It seems impracticable now, as it has since the early or middle nineteen twenties, because of competition of other transport service for the railroads to charge rates which will allow for adequate operating expenses, including reasonable charges for depreciation, and a fair return upon the fair value of their property. While some of the blame for inadequate railroad revenues can be laid at the door of the Interstate Commerce Commission, the greater fault lies with the railroad managements. Even in the period when higher rates might have been collected, there is no evidence of any concerted effort on the part of the carriers to get higher rates in order to make adequate depreciation charges.[14]

The Handwriting on the Wall

Although the shortcomings of railroad depreciation policy cannot be blamed entirely upon the lack of a long-range point of view by the managements, the continuing opposition of rail executives to adequate depreciation charges is a bit hard to understand.

The Interstate Commerce Commission took an unmistakable stand in favor of depreciation reserve accounting as early as 1907. The United States Supreme Court in 1909 pointed out in respect to depreciation that it is:

> . . . not only the right of the company to make such a provision, but it is its duty to its bond and stockholders, and in the case of the public service corporation at least, its plain duty to the public. . . .[15]

The railroad management contention that accrued depreciation should not be deducted for valuation purposes was flatly denied by the Interstate Commerce Commission in the first valuation case, that of the Texas Midland, in 1918. The commission has always held in valuation cases that accrued depreciation must be deducted. Nor has there been any serious doubt cast as to the legality of the commission's point of view.

[14] In rate cases in 1911 and 1915 (20 I.C.C. 243 and 35 I.C.C. 497), the railroads argued for higher rates, giving for the requested advance, among other reasons, the increase in operating expenses due to depreciation. In both cases, however, the evidence of the railroads was not convincing, since the carriers were making no provision for road and structures and were not making very impressive charges for equipment.

[15] *Knoxville* v. *Knoxville Water Company*, 212 U.S. 1, 14. Like support to the depreciation reserve point of view is given in the *Minnesota Rate Cases*, 230 U.S. 352, 457 (1913); *Des Moines Gas Company* v. *Des Moines*, 238 U.S. 153, 168 (1915); *Lindheimer et al.* v. *Illinois Bell Telephone Company*, *supra*, p. 167 (1934). For the most part, in cases involving this point, the Supreme Court has been content merely to quote the Knoxville case.

The income tax provisions and the post-war experience taught American industrial companies the necessity of providing adequately for depreciation reserves. The history of industrial concerns throughout the twenties is replete with examples of liberal depreciation allowances. While one cannot say definitely what part these depreciation allowances played in the simplification of industrial financial structures, such liberal allowances as were made must have served to reduce long-term debt. Of course, one should recognize too that retiring of long-term debt by raising capital through stock sales in the highly receptive markets of the late twenties had much to do with the simplification of financial structures.

Even when the Interstate Commerce Commission set about to require depreciation charges on road and structures soon after the Transportation Act of 1920, railroad managements refused to see the wisdom in making such charges. This opposition to depreciation reserve accounting persisted through all these years, despite the fact that on all sides the wisdom of depreciation reserve accounting seemed to be recognized after 1910, if not before. For more than two decades the Interstate Commerce Commission has prescribed some sort of depreciation accounting. For as long, the Supreme Court has expressed soundness in such a policy. And for practically the same period, American business has employed depreciation reserve accounting. Certainly this period has been long enough to give the railroad managements an opportunity to develop such accounting.

One may say that had the railroads desired to make adequate charges for depreciation, they could not have afforded to do so. If railroad rates have been too low in the last two and one-half decades to provide for all costs of operation, including depreciation, there would appear to be some basis for this point of view. It seems fairly reasonable to assume, however, that, for the most part, from 1900 to 1925 (*i.e.*, before competitive agencies had been felt too strongly) a higher rate might have been collected. But even in these years there is no evidence that the railroads attempted to get higher rates through showing a marked increase of cost due to sufficient depreciation allowances.

Even though rates have actually not been high enough to allow for adequate depreciation reserves and a fair return upon property used and useful in the public service, it may well be asked whether the carriers could have afforded *not* to charge off depreciation in reasonably sufficient amounts. Sound policy which looks toward the future may mean parsimony in the better years to prepare for business changes which may be beyond the horizon. Not the least significant aspect of such a policy would be in the making of adequate depreciation charges with their accompanying effect upon the financial structure.

Depreciation Reserves, Financial Structure, and the Present Situation

The main point derivable from the present financial condition of the railroads, in so far as this condition can be traced to the lack of depreciation reserves, is the fact that the inadequacies evident in the present point out the need for a more thorough depreciation policy in the future. To deal with the past is, of course, useless; methods other than those possible under a depreciation reserve policy may be

needed for present difficulties. If bankruptcies and reorganizations are the only sound ways out, they should be faced. If the interests of society in transportation service demand higher rates from shippers, the rates of competitors of steam railroads might well be controlled in order to make higher rates possible.

The problem of collection of enough revenue by the railroads to make adequate depreciation charges is complicated by the deferred maintenance situation. The carriers have admittedly cut maintenance cost to the minimum during the business depression. If and as business returns to the railroads, large expenditures will be necessary on account of ordinary maintenance. These large expenses are likely to occur during the early years of the extension of depreciation accounting, thus making the problem of collection more acute.

There is no sound reason to believe that the railroads will ever be replaced, or that the bulk of our transportation service will ever be handled by any other agency. As business improves and the railroad financial structures are put in good enough order to survive the depression, the railroad managements would do well to investigate the advantages of adequate depreciation reserve accounting. Since the Interstate Commerce Commission has never seen fit, aside from prescription of specific depreciation rates on equipment for the individual roads, to prescribe rates at which depreciation must be charged by the carriers, the ultimate success of the mandatory extension of depreciation accounting rests with the railroads.

Instead of trying to resist the fact that depreciation does exist, instead of opposing extension of depreciation accounting, the carrier executives would do well to undertake some research of their own concerning depreciation policies. Whether these executives agree with the broad outline of the commission policy or not, they may as well become reconciled to it. So fundamentally sound a financial and accounting policy is too well intrenched in business and accounting practice to be thwarted by unjustified criticism and lack of cooperation. Moreover, even though railroad managements dislike interference in their private operation of the roads through publicly prescribed accounting measures, they would do well to realize the possible benefits from adequate depreciation reserve accounting. Certainly any measure which would tend to aid a debt-heavy financial structure would be a means of striking at the immediate cause of bankruptcies and low or nonexistent dividends.

RAILWAY TRAFFIC ORGANIZATION UNDER FIRE

BY JAMES C. LONGINO

"THE Railway Traffic Department, to meet the new conditions which have arisen and the grave responsibilities which rest upon it, is in need of thoroughly reorganized functions, methods, and personnel." This sweeping indictment is contained in the Railway Traffic Organization Report prepared in the office of the Federal Coördinator of Transportation, and submitted on July 19, 1935, to the Carriers' Regional Coördinating Committees for their consideration.

Mr. J. R. Turney, under whose direction the report was prepared, was formerly Vice President in Charge of Traffic on the Cotton Belt Railroad. The railroads cannot wave him aside as a theorist, or lightly dismiss his criticisms as visionary. Even those who may disagree with his conclusions must admire the straightforward, candid manner in which they were made.

By personal interviews, and correspondence with railroad officials, industrial traffic managers, and other interested parties, the writer has endeavored to find out what the railroads have to say in response to Mr. Turney's outspoken criticisms. First consideration will be given to the organization and functions of the traffic department,[1] a knowledge of which is essential to a full appreciation of the subject.

Organization and Functions of the Traffic Department

The 150 Class I railroads[2] of the United States, reducible to 100 independent systems, embrace 93% of the total mileage and earn 97% of operating revenues. Their business organization varies in accordance with size, traffic, territory, and the influence of dominating personalities. Some have as many as 13 major departments,[3] organized for the most part along functional lines, of which the operating and traffic departments are the most important from the traffic viewpoint. The operating department is concerned primarily with the production of transportation; it includes transportation, motive power, maintenance of way and structures, and sometimes construction. The traffic department is concerned primarily with revenue; it includes the pricing, selling, and servicing functions.

In the organization of traffic departments there is a great lack of uniformity, a diversity which, of itself, suggests the absence of scientific development. An executive and administrative force, usually consisting of a vice president with assistants and an administrative staff, is charged with the formulation of general policies, interior administration, coördination, discipline, and personnel. The methods employed in discharging these duties follow no uniform pattern. For example, in one traffic department all personnel matters may be handled directly by the vice president in charge; in another they may be delegated to a chief clerk.

The pricing department is one of the two main sub-departments. It includes the personnel engaged in making rates,

[1] This article deals primarily with freight traffic, the major source of operating revenues. Passenger traffic contributes approximately only 15% of the total (15.1% in 1929; 11.4% in 1934).

[2] A Class I railroad is one with an annual operating revenue of $1,000,000 or more.

[3] Huebner, Grover G. and Johnson, Emory R., *Railroad Freight Service*. New York: D. Appleton and Company, 1926, p. 413.

quoting rates, publishing tariffs, supplying information and expert testimony in rate litigation, establishing through routes and joint rates, dividing joint rates among participating carriers, and handling all similar problems. The board of directors, the president, and the traffic vice president possess rate-making powers, but usually delegate them under established policies to the general freight agents, who make rates subject to the approval of general freight traffic managers, under whom they function. These latter officials also have rate-making powers, but usually exercise them in a supervisory manner, devoting the greater part of their time to negotiations with other lines on details pertaining to joint traffic. In addition, railroads which handle large volumes of particular commodities, such as coal or grain, sometimes employ for the purpose special traffic officials who may function under the immediate supervision of the traffic vice president. The classification of freight, which forms the basis for rate-making, is worked out by officials of the traffic departments in joint classification committees.

The selling department is the other main sub-department of the traffic department. It is usually under the charge of an assistant general freight agent, who has a central force of assistants and employees, under whom, in varying relationships, is the personnel engaged in traffic solicitation. This personnel includes division freight agents, district agents, contracting agents, off-line agents, soliciting agents, traveling freight salesmen, and other variously designated agents.[4]

[4] The space limitations of this article prohibit a more extensive treatment of the organization and functions of the traffic department. For a more detailed picture the reader is referred to Huebner and Johnson, *op. cit.*, pp. 413–442.

Neglect in Development of the Traffic Department

In 1920 the railroads, after 26 months of Federal war-time operation, were returned to their private owners. Facilities and equipment were in poor condition, and transportation was disorganized. In the succeeding period declining income and inflexible labor costs made operating economies mandatory. Consequently, attention was concentrated on the operating department, with the result that operating efficiency was steadily increased. Strangely enough, the other main division, the revenue division, or the traffic department, despite its primary importance, has not been given equal attention.

Established in its present forms in the days when the railroads, except for vigorous intra-agency competition, had a virtual monopoly of transportation, the traffic department, with rare exceptions, has not been modernized to conform to the spirit of new legislation, to meet the challenge of highway transportation, or to serve the needs of modern business. But for the rapidly growing competition of the motor truck, this state of indifference might have continued indefinitely. The Federal Coördinator's office has finally taken the initiative in bringing the facts to light.

The report effectively uses a wealth of valuable statistical data to support its conclusions, the most important of which, with counter arguments by the railroads, are presented below under *Pricing*, *Selling*, and *Personnel*, functions of the traffic department about which they naturally group themselves.

Pricing

Although the carriers retain a nominal independence in the matter of rate-making, it should be understood that competitive rates are worked out in joint committees, and that dissenting carriers may appeal to higher committees, of which the joint executive committee is final. This procedure involves extensive negotiation, duplication of effort, delay, and expense. Furthermore, rates cannot be put into effect until they have been approved by the Interstate Commerce Commission.

The report advocates that the pricing (rate-making) function be systematized and committed to a single agency for all railroads. It states that, at present, because of over-organization in rate-making procedure and the large degree of decentralization, the great bulk of the time of the pricing staff is devoted to routine work instead of creative pricing. The multiplicity of pricing agencies is expensive. The extent of interterritorial exchange of traffic requires a nation-wide attitude toward pricing. Unnecessary waste of man power and money is incurred in the division of through (intercompany) rates, and heavy cost is incurred in defending the legality of rates and in the publication of carrier tariffs. Joint publication would save considerable expense. The railroads feel that, because the information is needed promptly, individual publication cannot be avoided. As to the other questions, they are inclined to say the work must be done, and to accept the expense as inevitable.

Unanimity of opinion, almost to the point of obsession, was found among railroad officials that the railroads are individual enterprises, and that as long as they remain under private ownership they must and will compete with one another. Central pricing under such circumstances, beyond the degree afforded by the joint bureaus and the association as described above, is regarded as utterly impossible. The necessity for quick decisions in rate-making is stressed, and the fear is expressed that further centralization would lead to bureaucracy with attendant red tape and inertia. One official, who was quite open-minded about the report, remarked feelingly that its underlying philosophy was wrong and unfair, in that it admitted private ownership while denying the logical characteristics thereof. The railroads admit that transportation is no longer a monopoly and that their interests demand a united front to meet competition, but they refuse to admit that coöperation and coördination mean the surrender of the right to individual action in their own interest. Should the Boston & Albany, in the interest of the railroads as a whole, surrender the exclusive rights it enjoys on its belt line through industrial Cambridge and Somerville? Over-all economies for New England railroads could be effected thereby, but the Boston & Albany would lose a competitive advantage. One can readily understand the Boston & Albany viewpoint.

About four-fifths of all railroad traffic is joint, and requires joint action by the carriers. They bargain with one another, and they bargain with shippers, for which purposes they have set up elaborate machinery. They regard the admitted defects of this system as lesser evils than those which would arise under a great central bureaucracy. Mr. Turney contends, however, that the extreme decentralization of the pricing function results in disservice, lack of planning in rate-making, and undue costs. He em-

phasizes the fact that small shippers frequently utilize other forms of transportation, where rail transportation would be more economical, merely because of the complexity of the latter's tariffs. In many instances, rigidity of the price structure prevents justifiable adjustment to shippers' needs, and drives available traffic into the hands of competing transportation agencies. The importance of this need for more prompt and simpler pricing is readily appreciated when it is realized that a great part of railway traffic originates with the small shippers.

In considering further the pricing problem, the report states:

> With the development of the new modes of transport, the problem has been further complicated by the need to relate prices to cost—those of the competing as well as the rail agency.

The railroads are now enmeshed in an exceedingly complicated system of rate-making. It appears that revision along the line advocated is essential unless the cream of traffic is to be surrendered to the highway carriers. The report finds a vital need for increased contact between the pricing force and the shippers. One traffic department official pointed out an apparent lack of need for such contact. He stated that the shippers' expert knows his one commodity like a book, far better than the best railroad expert, who has many thousands of items to deal with, can possibly know it. An official of another road, however, told of an interesting experiment being conducted as a direct result of the report. Rate traffic men are being sent into the field where they report to territorial salesmen whom they accompany upon rounds of solicitation. The inauguration of this plan is too recent to permit evaluation, but as one example of a constructive attempt to profit by the investigations and recommendations of Mr. Turney it is of great interest.

The report advocates a combining of the selling and pricing functions, a shift from present functional lines to what is termed a "commodity" organization. It points to the establishment of specific traffics, *e.g.*, coal, as steps in that direction. The railroads, as far as we have ascertained, disagree. They consider the pricing and selling functions fundamentally separate and distinct. They consider the proposed type of organization advisable only in cases where a particular commodity furnishes a preponderant share of the traffic.

In considering the conflicting views of the interested parties, one is astonished to learn that after nearly 50 years of regulation the railroads still fail to see or to admit that they are private enterprises only to the extent that the public interest will be best served by such individuality. Furthermore, it is felt that the flexible, efficient, and aggressive motor truck makes it absolutely necessary for the railroads in their own interests to act collectively instead of individually. Fortunately recent railroad legislation makes provision for such action.

The railroads can work together, as has been shown by joint bureaus on interline rates and similar matters. Central pricing seems equally feasible. It appears that a central bureau would be an effective umbrella to unjust demands now rained upon individual roads by industrial traffic managers and regional politicians. As to the railroads' argument of bureaucratic inertia, it is difficult to conceive a more complicated system of rate-making than

that now in effect. A central bureau would eliminate several steps in the process, and should result in quicker decisions at greatly reduced cost. Cases would be decided more upon their economic merits, and individual railroads would not be stampeded into making unwarranted concessions. Vicious rate wars would also be eliminated.

Selling

The report advocates that the selling function should be integrated into a limited number of carrier groups, with selling planned and directed by the central staff rather than by salesmen's "self-activation." Sales effort should be supplemented by a thorough and continuous advertising program. At present there is unnecessary and expensive duplication of solicitation by a carrier's own agencies as well as by those of competing lines. Infrequent shippers are not effectively reached, and adequate service is not provided for large shippers. There is a general lack of sales effectiveness.

The report points out that the sales-expense ratio to total freight revenue is 1%, which is relatively low when compared with competitive industries, but high when compared with monopolies. This statement led one official to complain:

> In one place [in the report] the railroads are told that they should centralize functions because they no longer have a monopoly. This is inconsistent, for here we are judged by monopoly standards.

It is felt that the writer can present the railroad viewpoint on the selling function by giving, almost verbatim, the views expressed by a traffic department official.

> Selling is an art. *How* to sell must be related to the individual who is buying. This calls for salesman "self-activation." Solicitors function under division freight agents. They are widely scattered, but they are checked up and kept informed. They are wide awake; they get tips from every conceivable source; and they aggressively solicit business. The duplication of effort complained of in the report is evidence to this effect. If one doubts this, let him put out the slightest rumor of a prospective movement of freight. He will find that the solicitors are on the job.
>
> Our solicitors are specially qualified for the selling job. They are expected to keep well informed without too much direction from above. Decentralization of operation gives definite advantages arising from maximum utilization of individual effort, and relieves higher executives of burdensome detail. As to checking up, a solicitor would as soon lose an arm as fail to get for his railroad a sale which he should have secured. He does have to answer at high court for such failures.
>
> The best index of selling-efficiency is "Are we getting the business?" An accumulation of reports and records in the central office, already overcrowded with routine, would be of doubtful value. By personal contact, by observation of comparative results, and by frequent conferences, such matters are much more effectively handled.

The foregoing views have been presented at some length because they indicate the general failure of the railroads to recognize and obtain the advantages of central planning, direction, and analysis of sales effort. When such control is lacking, methods are haphazard and results are likely to be the same; when it is present, methods are carefully planned and results are likely to correspond. Defects in the human equation are both minimized and quickly exposed by an adequate system of statistical control.

Under the heading, "Sales Effectiveness," the report states that 6,800 solicitors and 5,600 shippers agreed

upon methods by which sales effectiveness could be increased. It was agreed, for example, that "in selling railway service, the stressing of the transportation features was more important than the sales manner or personality of the salesman." The writer found violent disagreement with that statement among traffic department officials. It was argued that the big shippers *know* what services they can get; selling them is an art of personal salesmanship. This viewpoint, to the writer, appears to reveal a fundamental shortsightedness. The railroads overlook the fact that it is not Mr. Turney with whom they are taking issue, but 6,800 of their own solicitors and 5,600 shippers, who certainly should know what they are talking about. In like manner, the officials concerned have failed to keep "an ear to the ground," and to learn the needs and the opinions of their customers. Such neglect has continued and has been perpetuated by faulty organization and lack of appreciation of modern methods.

The report states, "The demand that solicitors be trained as rate experts was almost unanimous." The railroads reply that this statement might well reflect a desire on the part of shippers to bargain with solicitors and thereby secure preferential treatment or lower rates. They say further that the complexity of the rate structure makes such procedure manifestly impossible, as well as inadvisable, if uniformity is to be had, and just and reasonable rates to all alike are to be the criteria. Even so, the railroads should be concerned because competing agencies find it possible to overcome these objections.

In 1933, according to the report, the railroads expended only $\frac{1}{100}$ of 1% of their freight traffic revenue in advertising freight traffic. It is urged that an advertising budget of $\frac{1}{2}$ of 1% of freight revenue would probably prove to be a remunerative investment. This question was discussed by the writer with the traffic officials of three railroads. Two of them were definitely opposed to the idea; the other was more open-minded. He was certain that advertising passenger service gave good results. He had formerly been of the opinion that advertising for freight traffic was futile, but now he was beginning to be less sure. "It appears," he said, "that the public will buy anything if sufficiently 'sold.' That might apply even to freight traffic." He felt that when something new was attempted, or when a new service was installed, advertising might be advantageous.

The other two officials, referred to above, took the position that advertising would not increase the total freight traffic, that at best it would be a help to only a few railroads to the detriment of others, and that the expense involved would be a net loss. They contended that the aggressive work of the industrial research departments performed the function of creating new traffic, and obviated the necessity for extended advertising. Even if these arguments, by no means conclusive, in regard to the inelasticity of freight traffic should be accepted, it is strange that the possibility has apparently not occurred to them of redeeming, by means of advertising, a considerable portion of the traffic which has been lost to competing forms of transportation.

Competitive advertising by the railroads, one can see, might prove quite expensive, and, if recklessly indulged in, might result in social disservice as an economic waste. This possibility,

however, is no reason why reasonable advertising should not be attempted, at least as an experiment to test its value. The *Traffic World* is authority for the statement that such advertising was successfully employed by the Cotton Belt Railroad under the direction of Mr. Turney.

The railroads resist the idea of centralization of the selling function upon the same grounds noted above as objections to centralization of the pricing function, namely individuality and the fear of bureaucratic control. It is apparent, however, that by elimination of duplications a large percentage of present selling costs could be saved. Selling, if centrally controlled, could be uniformly conducted along scientific principles. Sales could be allocated to railroads on bases of service and cost, and, where such advantage was nonexistent, upon a fair *pro rata* division. Sales analysis and individual comparisons, criteria of effectiveness, would become valuable tools of management. The railroads question the proposed centralization of functions, yet within their own organization the American Railway Express Agency supplies an analogy apparently demonstrating its practicability. If one agency can efficiently handle the express shipments for the railroads as a whole, it appears reasonable and logical that one central agency could do the same for freight shipments.

The constantly recurring attitude on the part of railroad officials of opposing or at least passively resisting new ideas and new methods leads to a consideration of personnel.

Personnel

. . . the personnel is not so distributed among age groups as to provide a continuous supply of officer material ambition, and is of an average age likely to produce a shortage of such material in the not distant future. These solid age blocks serve to discourage younger men, and evidently have prevented rail traffic departments from securing younger men of a generation that has been able to secure a greater education than previous generations enjoyed.

This quotation from the report is given because it would be difficult to overemphasize its importance. To continue:

> The average age of officers was just under 52 years; 2% were over 70 years; 21% over 60; 53% over 50; 88% over 40; and 99% over 30 years of age. The average age of solicitors was 44 years and of clerks not quite 40 years.

Additional figures are as follows:

	Average Age, Years
Chief freight traffic officers	58
Assistant freight traffic officers	53
Principal pricing officers	53
District or division pricing officers	54
Principal sales officers	54

These figures speak for themselves. They are eloquent as to conditions within traffic departments. They are danger signals of a critical replacement problem in the near future.[5]

In addition to the age deficiency, the employees of traffic departments are of narrow service experience, and are comparatively lacking in higher education. The departments as a rule maintain no definite training programs, but depend upon the results of individual ambition and initiative.

The unanimous opinion of the railroad officials consulted was that no personnel manager was necessary. This view was based upon the smallness of the number of employees involved, upon the expense, and upon the desire

[5] Changes caused by the depression should be noted as one factor in the situation.

to retain greater control over personnel, for whose efficient performance of duty the head of the department is held strictly responsible. As to efficiency ratings, that was a matter of personal observation rather than of periodic examination.

In the matter of personnel, the railroads undoubtedly have much room for improvement. A possible explanation for this ultra-conservativeness lies in the high average age and narrow experience of officials and employees. Not only is this situation leading to a pressing replacement problem, but it is perpetuating ancient policies and methods which are unresponsive and even repugnant to modern conditions. Executives complain that their employees, instead of appealing to them, appeal over their heads to the public. What else could they expect when they have so signally failed to make their interests mutual? A good personnel program would do much to remedy the situation. Such a program should include the adoption of definite personnel policies worked out by a trained personnel manager in collaboration with both labor and management. Details of such a program can be found in the many volumes of literature available on the subject.

The writer is strongly impressed with the great opportunity now open to the railroads in this respect. A greater business activity appears immediately ahead. Great change in personnel is imminent because of the high average age. A more opportune time to adopt sound personnel policies will never exist.

Opportunity for Research

In addition to the changes advocated under *Pricing*, *Selling*, and *Personnel*, the report urges the formation of an aggressive and competent joint-traffic development agency, devoted to market research, and traffic and industrial development for the railroads as a whole. It charges that, at present, direction of sales effort by the central office is impossible because of lack of information regarding the sources of traffic, present and potential. Carriers are without the basic information necessary to locate sales agencies properly and to test their efficacy. There is no analysis of results or evaluation of sales effectiveness.

The railroads issue blanket denial to such implications. There is a tendency on the part of individual carriers to view the conditions described in the report as average conditions, and to exempt themselves from their application.

It should be noted that the report speaks favorably of the traffic and industrial development activities conducted by individual railroads. It would go further, however, by extending these activities to a complete market research, and by combining them into one central agency for all railroads.

Conclusion

The *Traffic World*, in its issue of August 10, 1935, said, "All we suggest is study and thought rather than dismissal of what Mr. Turney says as the wild ravings of an enthusiast with no practical knowledge or sense." Neither Mr. Turney nor the railroads should quarrel with that view. While the report may not in all cases present workable solutions, it does focus attention where improvement should and can be achieved. The new conditions which have arisen and the grave responsibilities resting upon the traffic department call for reorganization of functions, methods, and personnel.

More goods are to be moved today than ever before. Thousands of miles of new road are to be laid from store door to store door. Superior and more efficient equipment is available for the task. "Can Railways Come Back?" asks *Railway Age* in its issue of October 12, 1935. It answers affirmatively, provided there is a general recovery in business and a recovery of some of the traffic lost to competing carriers. The sustained increase in car loadings indicates that general recovery is imminent. As to recovery of traffic lost to competing carriers, it seems that a "smart" railroad could do far worse than to ask Mr. Turney to become its Vice President in Charge of Traffic.

STANDARDS OF PURCHASING PERFORMANCE[1]

BY HOWARD T. LEWIS

PROCURING materials of the right quality, in the proper amount, and at the best possible price is a most important prerequisite to manufacturing. The proper performance of this function is of particular importance during those stages of the business cycle when prices are rising or falling with considerable rapidity. Were all other costs, as well as the selling price of the manufactured product, to rise or fall in like proportion, the consequences, as far as a company's profit position is concerned, would be less significant. Because such ratios are not constant, it is highly important that the effect of movements of material prices on the final result is clearly understood. It must be observed, however, that management is commonly satisfied with a somewhat narrow interpretation of such relationships, since it is content with knowing that within a given period a particular company's material costs *actually* rose or fell by some certain amount, whereas for control purposes the significant facts have to do with what those costs *would have been* had the purchasing function been performed more efficiently. Until some standard can be set up as to what purchasing under efficient management should accomplish, and purchasing gains (including those from speculation) are regularly segregated from all other sources of gain, no dependable conclusions can be drawn concerning a given purchasing policy, and effective managerial control becomes impossible. To state the same thought in another way, while the cost of materials itself constitutes an important part of the production cost, the function of *acquiring* those materials, like the function of *disposing* of them after they have been processed, should be considered as a separate activity,[2] with its own standards of efficiency.

It is obvious, however, that before management can hope to evolve any standards of efficient purchasing it must have a clear comprehension of the nature of the function. That the general manager is responsible for purchasing policy and its results is beyond question; but that, broadly speaking, business management in this country has any comprehensive conception either of what this function involves or of what constitutes its reasonably efficient performance, is open to serious question. Any attack that can be made on the problem of setting purchasing standards, therefore, even though the ultimate objective is not attained immediately, should at least result in greater clarity of thought in determining the proper limitations and responsibilities of procurement.

But if management has failed to evolve any adequate standards for measuring the effectiveness with which the purchasing function is performed, or even to define clearly the scope of the function, it must be added that both the cost accountant and the pur-

[1] Presented at the annual convention of the National Association of Purchasing Agents, New Orleans, May 28, 1936.

[2] If it is asserted that purchasing is an integral part of the production process and that it therefore should not be separately considered, an obvious answer is that while it is true that materials are not acquired for their own sake but rather for processing, it is equally true that the manufacturing process is not an end in itself but merely a preliminary to sales, the costs of which are by common consent separately computed.

chasing officer have been equally lax. The cost accountant has been curiously hesitant about attacking the problem, has made practically no progress toward its solution, and even contends that no workable solution is possible. When he does give it serious consideration, however, he will find himself in an area of industrial accounting that is as yet almost untouched. Assuming that he enters it free from bias and preconceived ideas as to what purchasing is, it is quite within the scope of probability that he can aid materially in setting acceptable standards as well as in contributing toward further breaking down the dangerous generalizations with reference both to cost of individual operations and functions and to sources of profit.

With this situation in mind, it is the purpose of this discussion to describe somewhat more particularly the nature of the problem and to suggest some steps toward its solution.

The Purchasing Function

Before any attempt is made to outline a possible method of procedure, certain preliminary observations should be made. The expense of performing the purchasing function is not to be confused with that of operating the purchasing department. There is a real difficulty here, in that the organization for purchasing varies substantially as among different companies, and even within the same company the purchasing responsibilities are often divided among various individuals. It must be kept in mind, however, that the expense of operating a purchasing department is not under analysis, but rather the expense of performing the purchasing function. The purchasing function is understood to relate to those activities directly connected with the acquisition of required materials, fabricating parts, and supplies, of the proper quality, in economical quantities, and at a fair price. It includes the inspection of incoming items as a necessary preliminary to their admission to stores, and also storage, as will be explained later. In the present analysis the purchase of major equipment is not included. This is a serious limitation and not a wholly logical one. The only justification for its exclusion lies in the desire to simplify the problem.

It is well to recognize that there are certain intangible, though very real, values attached to efficient purchasing; for example, the goodwill of a company's suppliers, many of whom are actual or potential customers; or savings in production costs resulting from suggesting the substitution of a new product or material for one already in use. No attempt is made to place a specific value on such intangibles, partly, though not entirely, because there appears to be no adequate method for measuring them.

The purpose of this analysis is not primarily to devise a measure of the purchasing officer's efficiency, but rather to provide some adequate basis by which management can more clearly segregate purchasing from the other major activities of the business, and can thereby evaluate better its purchasing policies, as distinct from its policies as to finance, production, or sales. There are many factors affecting purchasing expense that are wholly beyond the control of the individual purchasing officer. Thus, one company may have sufficient working capital to take advantage of quantity discounts; another may not. The management of one company may have both the funds and the desire to engage in a certain

amount of speculative purchasing; another may not. Yet conditions such as these affect the final expense figure. The most that can be said, therefore, is that for the company in question certain purchasing expenses were incurred. These expense data are then subject to interpretation. High total expense for one company may be thoroughly justified, whereas low total expense for another may be open to considerable question. The purpose of such an analysis is to provide a basis for judging whether the function is being performed as well as it might be.

Desirable though it might at first appear to devise a system of accounts equally applicable to all types of industry for comparative purposes, it is doubtful whether this can be done, or whether, after having been done, it would be of any real value. At best, comparisons could be made only between the figures of an individual concern and the "common figures" for that particular industry. Even for types of manufacturers having substantially common characteristics, this might not always be practical for all groups. This limitation, resulting in part from the present stage in the developments of cost accounting, does not preclude making a start with groups in which satisfactory analyses can be made—nor does it, merely because common figures do not exist, preclude individual concerns for which usable expense data can be developed from taking advantage of such data.

The objective of the present study, therefore, is that of getting a reasonable and approximate basis for analyzing the expense of performing the purchasing function as defined. The problem is simply: "Is the analysis sound, and would the results be sufficiently accurate for purposes of control?"

Any valid analysis of purchasing expense involves a consideration of the following: purchasing administrative expense; gain or loss resulting from forward buying of materials and supplies; storage and warehouse expense; and losses due to errors and delays. In addition, consideration may be given to the disposition of scrap and waste.

Purchasing Administrative Expense

Administrative expense includes such items as salaries paid to purchasing officers and assistant buyers, clerical expense, traveling expense, office expense (including heat, light, and rent), and miscellaneous (including subscriptions, dues, convention expenses, etc.).

No serious problem is involved in the computation of these expense items. It is true, however, that administrative expense is only a small part of the total purchasing expense. On the whole, furthermore, this item is more or less inflexible. For instance, from an administrative point of view it may cost no more to purchase 5,000 units than 1,000 units, while the cost of obtaining 100 units of some item may be far greater than purchasing 1,000 units of another item. Although such differences do exist, the list of products purchased within any company remains relatively constant from one year to another, and hence these variations do not affect the total administrative expense substantially.

One problem in connection with the determination of administrative expense arises from the fact that in some companies a considerable amount of purchasing is performed by individuals outside the purchasing department itself. Thus, the treasurer of a grey goods mill may purchase cotton, or the production manager of a publishing house

may buy the paper, the remaining requirements being handled by the purchasing department. In companies where there is little centralization of purchasing, the cost of maintaining the purchasing department itself may represent but a small part of the actual administrative expense. Such a condition, however, is not generally to be considered good purchasing policy, and a company which permits it to exist is not one that is likely to be interested in determining its purchasing expense. On the other hand, the purchasing organization of a company may be highly centralized, and yet the executive in charge may be assigned certain other responsibilities as, for instance, supervision over traffic. Although such situations as these do involve some problems of expense allocation, the determination of the administrative expense should not prove unduly difficult.

Gain or Loss from Forward Buying of Materials and Supplies

A certain amount of forward buying is, of course, essential, if only to meet the current requirements of production. Many, if not most, companies, however, make commitments from time to time beyond these normal requirements in an effort to take advantage of price trends. The results of such speculative ventures not only are definitely determinable, but must be ascertained and segregated if any clear picture of the company's purchasing operations is to be had. The nature of the results depends upon the management's ability to forecast both production requirements and market prices. In other words, these results reflect the ability to recognize and take advantage of changes in prices, arising in the course of the business cycle or from other influences affecting particular markets.

It is perfectly possible to formulate a method, granting for the moment its feasibility, by which this factor in purchasing expense may be determined. The method is based on a comparison between the market price of materials and supplies as of the time these items move out of the storeroom or warehouse into production or use, on the one hand, and the price actually paid for them, on the other. To translate this general principle into something more specific, if materials are purchased for a price higher than that prevailing at the time they move into production, the excess should be added to the cost of purchasing. When they are purchased for less than this market price, a deduction from the expense of purchasing should be made.

This is essentially the procedure recommended by the Committee on Elimination of Waste in Industry of the Federated American Engineering Societies:

> It is therefore recommended: 1. That raw material be charged at current prices. 2. That use be made of a "material adjustment account" for raw materials.
>
> If the first recommendation is adopted, the advantage from speculative buying is removed. Variations between the actual cost of material and the cost charged at current prices may be adjusted by means of the account named in the second recommendation.
>
> Into the "material adjustment account" is charged the difference between the actual and current material costs. This practice is particularly desirable for pig iron, scrap iron, coal, steel products, coke, rubber, lumber, cotton, wool, and other materials of a staple nature. The account so established would exhibit the profit and loss as between the purchase price of material and the price which is charged into the cost. For example, suppose pig iron to be purchased at $35 a ton and suppose the market

later to drop to $30. The cost records would be charged at this latter rate of $30 covering the tonnage actually used, and the "material adjustment account" would be credited with the same figure. A second entry, however, would credit the inventory account, at the actual cost of $35, for the tonnage so used, with a corresponding charge to the "material adjustment account," the difference representing the loss on the material so used. The cost would then be figured on the basis of the normal condition which existed at the time the material was used. The difference would be carried to profit and loss at the end of the year.[3]

It should be noted that the market price as of the time materials enter production is used rather than as of the time they were purchased, partly because the real gains derived from efficient purchasing become effective only when such materials pass into production, whereas up to this time the advantages appear only on paper.[4]

A theoretical objection may be raised based on the fact that the buyer cannot purchase the goods on the same day that they are to be placed in production, as some time is required for delivery. Since the market price as of that day is not within the buyer's range of possible prices, it is inaccurate as a factor in determining the results of forward buying. Furthermore, the day on which the material enters production is determined by the production manager, and frequently he can change this date within limits of at least two or three days. If the efficiency of the production manager is measured by the cost of production, it is to his advantage to have the materials put into process at the lowest possible price, which places his interests in direct conflict with those of the purchasing officer. By using the difference between the price paid and this market price as the cost of purchasing materials, the purchasing officer

[3] In *Waste in Industry*, New York: McGraw-Hill Book Company, Inc., 1921, pp. 394–395. Also note the following quotation from *Profit Engineering* by C. E. Knoeppel, McGraw-Hill Book Company, Inc., 1933, pp. 164–165: "Purchasing Losses.—In one of the industries of the company—the manufacture of insulated wire and cable—large quantities of copper, rubber, lead, tin, and cotton are used. These are basic commodities subject to major market fluctuations. . . . These swings are cyclic. They may or may not be a 'within-the-year' proposition. They are without reference to manufacture, the efficiency of which may be constant during periods of loss or gain from purchasing. Unless these swings are isolated and treated separately, both cost and price calculations may be misleading and dangerous. Material should be carried to inventory at cost at time of receipt and to work in process at market or standard at time of use. This difference can be cleared to 'purchasing profit and loss.'"

[4] It is interesting to contrast this proposal with another type of suggestion designed to reveal profits due to price changes. Reference is made to the system of "normal" inventories, based on the "doctrine that a certain volume of raw materials, products in process and the like are to be considered as 'fixed' assets in much the same way, and for much the same reason, as plant and real estate are now so considered. That is to say that, while the identity of the individual units composing such an inventory is constantly changing, the quantity of stock on hand must be constantly maintained in the volume indicated, or approximately such volume, if the enterprise is to continue as a going concern. From this premise, it is argued that any cost of keeping this volume of working assets intact, that may be entailed by rising prices of articles to be replaced, is properly a charge against the income of the accounting period in which it is incurred, in much the same sense that repairs, replacements, maintenance and depreciation reserves are chargeable to earnings. Thus paper inventory profits and swollen inventory assets due to price changes would appear in the financial statement of corporations only in respect of inventory volume (measured in physical units) in excess of 'normal' and therefore presumably temporary in nature." Accountants generally have not endorsed this proposal, chiefly because the balance sheet of a corporation using such a system gives a deceptive appearance, unless the data are rather fully explained. The Bureau of Internal Revenue refuses to recognize such accounting procedure as legitimate perhaps for the same reason. Moreover, " . . . the same results can be obtained by adequate inventory reserves established and used at the proper times. If it be argued that practical difficulties stand in the way of determining when and in what amount such reserves should be established, the answer is that much the same problem is involved in determining the unit value to be placed and maintained upon the so-called 'normal inventory.'"

will be charged or credited with something over which he has no control.

This situation could be corrected by using the lowest market price between the date on which the purchasing officer was notified that certain materials would be needed and the last date on which it would be possible to order and still get delivery on time. The difference between this market price and the price paid would indicate the results of forward buying. The primary difficulty in this suggestion lies in the additional labor involved as contrasted with the recommended procedure. Furthermore, granting the soundness of the reasoning underlying the criticism, it is questionable whether the additional accuracy is, for all practical purposes, worth the added effort.

As has already been pointed out, the proposed method for determining the results of forward buying may indicate either a gain or a loss from such operations. If a gain is shown, it may be so great as more than to offset all other expenses of purchasing, in which case it would appear that the performance of the purchasing function had cost nothing. Such would be the conclusion, however, only where attention is confined to the total expense figure. Actually the total expense figure may be of little value for purposes of control, the significant items being the individual classification figures. Furthermore, the factual result always calls for an explanation. Thus the margin between the actual purchase price and the market price as of the time materials enter production may be narrower than was apparently necessary. This would be justifiable if the lowest available price had been rejected because it came from an undependable supplier. On the other hand, it may be that the market price on the day the goods were purchased was higher than the lowest market level for the commodity during the period in which the purchase could feasibly have been made. Facts such as these are revealed only when an explanation of the actual margin is given.

If the theory of the foregoing analysis is essentially sound, it is still necessary to consider its practicability. Primarily, the difficulties center around the feasibility of determining "a fair market price" as of the time the material passes out of stores and into production.

As a matter of fact, substantially this formula has been used. Quoting from an unpublished paper by Dr. Clarence B. Nickerson:

> Faced with the dangers of inflation arising out of conditions promoted by the World War, many companies throughout Europe adopted methods which would enable them to have a clearer understanding of the nature and source of their profits. Some companies wished, as far as possible, to eliminate inflationary profits from their profit and loss statements, believing them to be imaginary in the sense that they were merely a reflection of an existing monetary situation and would be followed by inevitable losses when that situation had been corrected.
>
> One of the methods commonly adopted involved the use of price adjustment accounts which absorbed inventory losses and gains and enabled the computation of a profit figure unaffected by them. . . .
>
> The use of replacement costs is one of the most important features of the method. Raw material enters production not at actual cost but at replacement cost. . . . Losses and gains from price fluctuations are segregated in special accounts.
>
> Material is entered in the raw material account at actual cost including freight and a charge for material overhead (purchasing, accounting, storing). It is credited out for production at its average cost and a corre-

sponding debit is made to a raw material price fluctuations account. At the same time it is entered in a work-in-process account at its replacement cost, including a percentage for freight and material overhead, and a corresponding credit is made to the raw material price fluctuation account. This price fluctuation account thus absorbs the difference between the average cost of the material and its replacement cost at the time it enters production. Though the use of replacement cost is a fundamental concept, as a practical matter minor fluctuations in the market are ignored. A list of standard prices is prepared for all materials, corresponding to the frequently adjusted or "ideal" standard costs used in the United States. This list is in effect a list of current market prices standardized to the extent of avoiding minor fluctuations of the market. When market prices have deviated sufficiently from the standard prices a new list of standard prices has to be made which subsequently is followed until it is time to make a new list of standard prices again.

. . .

The use of lists of standard prices is a sensible procedure but the conditions under which new lists are to be prepared should be set forth and followed consistently. A weighted index, weighted, that is, by the quantity of each item of raw material purchased in the previous year, should be used to follow the trend of prices. To simplify the computation of the index number, minor items of material and fabricating supplies which do not represent all together more than say 10 per cent of the total material cost should be omitted from the index. An index number should be computed once each week, using average prices for the week and weighting them as indicated above.

It should be decided in advance as to just how much of a change in the index represents a sufficient deviation requiring the preparation of a new list of standard prices. This would require study and experimentation, the problem being to recognize significant changes and yet to avoid the frequent preparation of new lists. Except in periods of extreme price changes it should be unnecessary to prepare more than an average of one new list per month and probably four new lists per year would be sufficient.[5]

There are, of course, many situations which may present difficulties for individual manufacturers.

(1) Special material or unusual products—even requiring special facilities for their production—may be purchased, for which no market price exists.

(2) Materials and supplies may be purchased on a basis of bids received rather than of market quotations. The only possible procedure is entirely to disregard such items. No harm results from so doing, particularly since they are more likely to be equipment and construction items, which, as has been said, have been excluded from our discussion. It should be borne in mind that we are endeavoring to determine the gain or loss from forward buying based on the differential between the actual price paid and the standard, which has been assumed to be the market price as of the time materials move into production. In cases such as the above where no standard for comparison exists, either as between one time and another or as between one quotation and another, such comparisons are out of the question.

(3) A company may buy a wide range of items, none of which are either substantial in amount or outstanding with respect to total expenditures. Two comments may be made concerning

[5] *Problems in Inventory Valuation*, submitted by Mr. C. B. Nickerson in partial fulfillment of the requirements for the degree of Doctor of Commercial Science at the Graduate School of Business Administration of Harvard University, January, 1935, pp. 159, 160, 162, 166.

this point: first, there are few companies that do not have some outstanding items; and, secondly, where such a condition does prevail, it is likely that the differentials between prices paid and market, over the entire range of purchases, will counteract each other. Moreover, for practical purposes of control, it is not essential, even in instances where the range of items is comparatively limited, to include data covering all items purchased by a company. For example, there is no particular reason for considering those items, however vital for operation, which are purchased in small quantities and do not require large expenditures of money.

There remain those items purchased in substantial quantities, involving a considerable percentage of the company's total expenditures, on which some appreciable gain or loss may result from forward buying on the one hand or from very close hand-to-mouth buying on the other. For the majority of companies, such items are comparatively few in number, and their prices are followed closely by buyers. Therefore, for companies whose principal purchases consist of comparatively few items of more or less common use, available in an open market, it should be possible to compare the price paid with the market price with sufficient accuracy for control purposes. Where the more important items of purchase lack these characteristics, the results will be less exact. This does not mean that the use of the suggested procedure is confined to firms operating under the one set of conditions, but rather that the less the conditions indicated apply the less accurate are the results. Approximate though such data may be, their compilation may still be very worth while indeed, provided the limitations are recognized.

(4) The buyer may enter into a contractual arrangement by virtue of which the price is either fixed during the life of the contract or is based on the market price as of the time of delivery. Neither of these situations raises any problem that has not been considered.

(5) The requirements of the buyer may be so large that to all intents and purposes he "makes the market." Here it may be observed that most manufacturers are not in this position and that so far as they are concerned, therefore, the point is not applicable. For those few who are able to "make the market," the problem would be a special one and would have to be so treated.

With reference to the general problem of determining a market price, several comments are in order. In the first place, an acceptable rule for inventory valuation has long been "cost or market, whichever is lower." Every accountant recognizes the limitations of this rule, for where the "market" is abnormal or virtually nonexistent, there is no alternative to the use of cost. The rule can be applied enough of the time, however, to warrant its general acceptance, and since it is workable in most instances, it follows that "market price" is determined in most instances. While it is true that in practice considerable confusion exists as to the detailed application of this commonly accepted rule, some progress has been made in reaching an agreement as to method. In any event, few accountants urge the adoption of any other rule, and the particular difficulties encountered are no greater in the present problem than those existing elsewhere.[6]

[6] For a general discussion of cost or market in practice, see "Cost or Market, Whichever Is Lower" by William R. Donaldson, *N.A.C.A. Bulletin*, October 15, 1933.

In the second place, practically every conceivable difficulty in arriving at a market price has been faced by such organizations as the Bureau of Labor Statistics. While the method of treatment adopted by these recorders of market prices may not be above criticism, it is still true that the data compiled are sufficiently acceptable to be widely used in a variety of practical ways.

In the third place, any alert purchasing officer is expected to have available, at all times, current information as to the market price and trends of the major commodities which he buys. When this situation already exists, few additional problems should present themselves.

Storage and Warehouse Expense

The items normally included in this classification are receiving and inspection of incoming materials; interest on goods in storage; rent, insurance, taxes; labor (both direct and supervisory); and losses through physical depreciation, spoilage, obsolescence, and theft.

A question at once arises in this connection as to whether or not storage and warehouse expense should be charged against purchasing in those companies whose organization provides for a segregation of storeskeeping from purchasing. There would appear to be only one reasonable answer to this issue. The storage of materials and supplies, other than those in process or in the finished state, constitutes a part of purchasing. The essential task of the purchasing function is to have available, as called for, those supplies or materials required in the operation of the departments using them. These departments are concerned with usage, not acquisition; the distinction between these terms is fundamental to any sound conception of the purchasing function. As a workable rule, therefore, that part of storage expense chargeable to purchasing may be said to include the expense up to the point of issuance from stores to the using department.

There are two possible reasons for segregating the control of stores from procurement. One is lack of confidence on the part of the using department in the ability of any other department to insure availability of materials or supplies. There is, however, no basic reason why the using department should be any more capable of performing this task than a well-organized purchasing department. As a matter of fact, there is a good deal of evidence that shortages are more likely to be avoided and overages are less likely to occur when the contrary situation prevails. Furthermore, it will be generally granted that purchasing is responsible for the purchase of goods and their delivery to the plant. The time required for delivery is as important as the rate of usage in controlling the quantity necessary to carry in storage. Thus, both practically and logically, storage should be considered a part of the purchasing function. The second reason advanced for the segregation of stores from purchasing is that in certain industries there is a tendency to store at or near numerous production centers. Where this practice prevails to the virtual exclusion of central storage, it is probable that a separate storage charge cannot, as a practical matter, be determined with sufficient accuracy to make the effort worth while. Even where decentralized storage is practiced, however, some central storage is usually required.

A similar type of difficulty presents itself in those organizations where storage includes proper handling not

only of incoming materials but likewise of semifinished and finished goods, as well as outgoing merchandise. Even under such circumstances a composite figure representing total storage expense would appear to be rather important. If so, and if such a figure is obtained, the problem then becomes essentially one of allocation.

Losses Due to Errors and Delays

In addition to administrative, forward buying, and storage expense, there is a fourth item that must be considered, namely, losses due to errors and delays. The additional costs due to errors and delays are by no means easy to determine, and in the present instance this difficulty is at times complicated by the necessity of determining the responsibility for the loss with sufficient accuracy to make the resulting figure worth while. Errors, perhaps resulting in costly delays, may be the result of faulty purchasing organization, an ineffective system of inventory control, an attempt on the part of the purchasing officer to follow a too rigid hand-to-mouth policy, or conditions entirely beyond the control of the purchasing organization. In the first three instances, the expense is chargeable to purchasing.[7] The fourth situation occasionally arises, as when sales or production departments fail to notify the purchasing department of unusually large requirements far enough in advance to make it possible to meet the commitment. In this case the loss occasioned by the delay is more properly chargeable elsewhere.

Four major types of errors may be noted:

(1) Those errors which are largely clerical in nature are corrected within the office itself. No particular consideration need be given to the cost of such errors since they would be reflected in the administrative costs already discussed.

(2) A vendor may correctly fill an order for goods which, after entering production, prove to be unsuited to the buyer's use and are therefore returned to the seller. If such goods are returned without causing any delay in operations and without incurring any cost to the buyer, no harm is done other than an increase in the administrative expense. If, on the other hand, goods are returned at some expense to the buyer because he has to pay the freight, or because the supplier makes a charge for reconditioning the goods or for some other reason fails to give the purchaser full credit, then these costs should be charged against purchasing provided, of course, that the responsibility for getting the unsuitable material is that of the purchasing organization rather than due to inadequate or faulty specifications by the using department, a matter that should not be difficult to determine.

(3) Goods which cannot be returned and for which no use can be found in the plant, except perhaps at prohibitive cost, must be resold on the best terms obtainable. Any resulting loss should be charged against the responsible department. Thus, if the purchasing department transmit specifications inaccurately or places the order with an irresponsible supplier, the loss should be charged against purchasing. If, on the other hand, the engineering department, for example, sets up faulty specifications, it should bear the expense of the error. In the event that a profit results from the resale transaction, the

[7] It should be emphasized that to assign a figure to the errors and delays account by no means implies of necessity any inefficiency on the part of the purchasing officer. Such a figure merely calls attention to the fact that "somebody blundered." The seriousness and the responsibility are matters of managerial judgment.

department responsible for the error should not be credited with the gain, partly because the gain was the result of error and not foresight, and partly because such a procedure might provide an incentive to repeat the operation deliberately in the hope of again profiting thereby.

(4) When materials can be used in the plant at some additional expense, the extra cost should be charged against the department responsible for the error. This extra expense may arise somewhere in the process of purchasing or it may be a fault of the requisitioning department. An adequate system of cost accounting should reveal roughly the amount of the additional expense.

When, as a result of any of these errors, complete or partial shut-downs occur, two questions arise: Is it possible to measure the costs incurred as a result of such shut-downs with sufficient accuracy to be worth while? And, assuming that this can be done, to whom should such costs be charged? The answer to the first question will depend in no small measure upon the type of manufacturing involved. In some instances, a reasonably exact determination of shut-down costs is possible, while in other cases it would be much more difficult—at times because of the inherent costing problems and at times because management has not seen fit to give serious consideration to the determination of such costs. Where these costs can be ascertained feasibly and management can be persuaded that it is worth while to determine them even roughly, through standard costs or otherwise, the problem then becomes one of allocating the responsibility. To the extent that the shut-down was due to some failure adequately to perform the purchasing function, the entire cost should be charged to that function. The amount thus charged may at times loom very large in terms of total production costs, but it will not be disproportionate to its true significance. It has been pointed out that a delay in delivery resulting from an unwise choice of supplier, for example, is sometimes expensive and at other times costs the plant nothing. The only feasible procedure is to charge what and when it costs.

The four classifications thus far indicated—administrative, forward buying, storage, errors and delays—represent the major items of purchasing expense. In practice it will be found that, as a matter of organization, not all these functions are under the supervision of the purchasing department. From the point of view of the present analysis, this is not serious, since it is the function and not the department that is under examination. As has already been pointed out, there are various other functions only indirectly related to purchasing which in some companies are, for reasons of tradition, personnel, or accident, under the jurisdiction of the purchasing officer. Such activities are as completely outside the purchasing function as those mentioned earlier are integral parts of it.

Sale of Scrap and Waste

There is, however, one responsibility commonly assigned to the purchasing officer about which there is a considerable difference of opinion with reference to whether or not it is properly an integral part of purchasing. This relates to the sale of scrap and waste.

It is said that "scrap is material which has failed to complete utilization. A certain amount of this is inevitable—inherent in the manufacturing operation. Nevertheless, it constitutes a definite part of material cost, chargeable to purchasing. It can be

minimized by purchasing the most favorable quantities and qualities, and the buyer should also have the privilege of recovering the maximum value for the unavoidable portion of scrap." This argument, however, is not convincing. That waste or scrap which arises inevitably in connection with the manufacturing operation, and to which reference has already been made, is properly chargeable to production. Quite irrespective of the amount which the purchasing department procures, this form of scrap or waste will appear. If the production department could reduce this type of loss either through diminution of the amount of it or through its disposal to a buyer, it would be an indication of efficiency. It is difficult, however, to see wherein the purchasing department is responsible for its existence or logically chargeable with its disposition. Only in those cases in which losses occur because of deterioration or depreciation developing from the ordering of excessive quantities on the responsibility of the purchasing officer can the salvage of excess material be properly said to be a part of the purchasing officer's function. No logical justification can be presented for holding him responsible for the disposition of waste and scrap unless they result from the purchase of poorly adapted or ill-adapted material. Since the ultimate determination of the proper quantity to buy rests with the using department, it does not appear logical under the circumstances to hold the purchasing department responsible for these losses.[8]

If it is decided that the disposition of scrap and waste is properly a part of purchasing, two methods of treating the expense suggest themselves. One is to deduct from the expense of purchasing, as determined up to this point (gross purchasing expense), any net savings realized from the sale of scrap or waste. This net savings figure would represent the difference between the amount received from a buyer and the cost of assembling, reconditioning, and classifying the material, plus any legitimate selling expense that might be involved in the transaction. The alternative is to consider the disposition of scrap and waste as a service performed for other departments. Under these circumstances, a brokerage fee might be charged those departments for which the service is rendered, and the fee credited to purchasing. When this method is followed, the actual gain or loss resulting from the sale of reconditioned scrap or waste should be credited to the department within which the material originated.

When the first alternative is followed and scrap and waste items are sold at a profit, the purchasing department should be credited with this amount. A profit may appear not only when the amount received from the sale of these items is in excess of the cost of reconditioning and selling them, but also when the material, after being reconditioned, is used in the plant. In the latter instance the profit amounts to the difference between the cost of reconditioning and the amount which would have been paid on the open market for comparable material. Scrap and waste are seldom sold at a loss, since the material would not be reconditioned unless there was a reasonable expectation that it would bring a price greater than the expense of reconditioning. Actually, however, a loss does develop if, this expense having been incurred, the price obtainable proved to be less than the cost of reconditioning. Should a loss develop, strict consistency would demand that it be charged against the purchasing department.

In many instances, having segregated the items that go to make up total purchasing expense, it may be con-

[8] Lewis, H. T., *Industrial Purchasing*. New York: Prentice-Hall, Inc., 1933, pp. 177–178.

sidered worth while, in order to make effective comparisons readily, to compute the percentage of each separate item and of the sum of these items to some common base in much the same way as the individual items of marketing expense are commonly computed as a percentage of total net sales. The wisdom of taking this final step in every case, however, may be seriously doubted. For one reason, in the absence of available data similarly computed for other comparable companies, the really important thing for a company to know is how the figure for any one of the four elements of purchasing expense compares in one year with that of the same element in other years. Furthermore, for companies in which speculative buying is definitely a part of the purchasing policy, the net results—either gain or loss—are likely to be so much larger in volume and the variations so much wider than for any of the other items as to vitiate the value of any other percentages computed on the common base.

Where it does appear desirable to reduce each classified expense to a percentage of some common base, three possible bases suggest themselves. The ratios may be expressed in terms of (1) total purchase expense, (2) total cost of materials purchased, or (3) total production cost. The primary objection to the first suggestion is that it fails to relate purchasing expense to any objective of the expenditure, as is the case, for instance, when advertising expense is related to net sales, or power costs are related to total production costs; or as would be done if purchasing expense were related to the costs of necessary materials.

Of the two remaining suggestions, the second method rather than the third would appear preferable. In an adequate system of cost accounting, the expense of purchasing, the same as labor cost, should be separate from other production costs. Both enter into the final pricing; but purchasing costs should be separate and distinct from these other production costs because none of the latter are primarily dependent upon raw materials prices. Production costs are concerned with the manufacturing processes that transform the raw material into the finished product, while purchasing places the emphasis upon the price paid for materials of a quality suitable for such processing. There is no logic in expressing the costs of the one function as a percentage of another more or less unrelated to it. Furthermore, as a basis for management control of purchasing policy, it is important to exclude so far as possible the factors over which those responsible for purchasing have no jurisdiction. Since the costs of plant operation and the total requirements of materials alike are beyond their control, the inclusion of them in the base is somewhat illogical.

It is true that under the second alternative total dollar volume of materials purchased varies from year to year. It is also true that an increase in the amount of material required reduces the percentage of purchasing expense and that the lowering of the general price level increases the percentage of such costs (and *vice versa*). All these conditions would affect the validity of any comparisons which may be drawn. On the other hand, the influence of changes in the general price level can to some extent be corrected by the use of an appropriate index number. Furthermore, it may be noted that, while the dollar volume of purchases is likely to vary to some degree with the price level, a partially

counteracting element is introduced by the fact that the physical volume of purchase and, hence, the expense is likely to vary in the same direction.

Conclusion

It would, therefore, appear to be entirely feasible to develop a reasonable cost standard for purchasing. Thus, it would seem worth while to know what the administrative cost of performing this function should be. There is little reason to question the advantages of ascertaining what the storage charges are, if only to determine the real costs of materials and supplies. Clearly, too, in the interests of efficient operation, the responsibility for and the costs of errors and production delays should be known. As long as a manufacturing company intentionally speculates in raw materials—and most of them do, either sporadically or as a matter of regular policy—there surely is no room to doubt the wisdom of measuring, with all reasonable accuracy, the results of such operations. Certainly no manufacturer, regardless of his attitude toward a speculative policy in raw materials, can avoid facing the major purchasing problems that develop either in times of depression or of threatened inflation. It is altogether probable that the method suggested in the foregoing analysis can be considerably improved, but one may express the hope that the discussion may provide the basis for fruitful study.

Be that as it may, some attack on the problem is essential. It will not come from that type of purchasing officer who asserts that no definite standards can be applied to this function or that the expense of purchasing is of necessity an unfair guide to the efficiency with which it is performed. Little can be expected from that type of cost accountant who is more interested in the ultimate refinement of some detail of minor importance than he is in courageously and realistically cultivating an area where the final returns are likely to be much greater both in theory and in practice. Nor, finally, is the problem likely to be attacked by that type of business executive who sees in it merely an addition to a mass of statistical and accounting data already beyond his power to grasp. The attack is far more likely to come from another source, namely, that type of management—whose problem it is, after all—which recognizes the implications, both for the individual company and for our economic structure, of the fact that for manufacturing industries in the United States in 1929 "the combined cost of materials, fuel, etc., was *54.7 per cent* of the value of output" and that there was "an aggregate outlay of $36,683,000,000 for raw and semi-manufactured materials (exclusive of fuels)."

THE CAPITAL MARKET AND RECOVERY IN CANADA

BY LLOYD W. SIPHERD

IN the realm of economic change, Canada possesses the reputation of being relatively slow in its response to developments in other countries. Comparison is most frequently made with the United States, where swings in general business activity tend to precede those in Canada and generally prove to be more pronounced. It is to be expected, therefore, that considerable attention was attracted to a report issued by the Economic Intelligence Service of the League of Nations to the effect that the rate of industrial progress in Canada, during the twelve months ending July 31, 1934, was the highest of any of the countries studied. All countries of major importance were included in the survey. Since that time, progress in Canada, as indicated by indexes of business activity, has continued to be impressive.

It is essential, however, to study this record of progress critically. Thoughtful students of economic conditions are pointing out today that more attention should be paid to one important phase of economic recovery, namely, the restoration of capital flow into private industry. For example, in its report before the American Bankers' Association last November, the Economic Policy Commission pointed out that the reason for prevailing optimism is that conditions are improved for the great majority of businesses. The commission asserted that there was not a sufficiently general recognition that genuine recovery in the heavy industries, where unemployment is greatest, has not taken place, and that the flow of new capital into private undertakings is yet to be stimulated.

It is believed that such emphasis is properly placed in all studies of economic recovery. Not only is expanding investment a definite evidence of a quickening of activity in business, but expenditures which arise from such investment provide a stimulus to employment, a very important factor in the recovery from the current depression. It is the purpose of this paper to present an analysis of recent developments in the Canadian capital market and to appraise those factors which are likely to influence the recovery of more normal conditions in the immediate future.

Capital Market Statistics

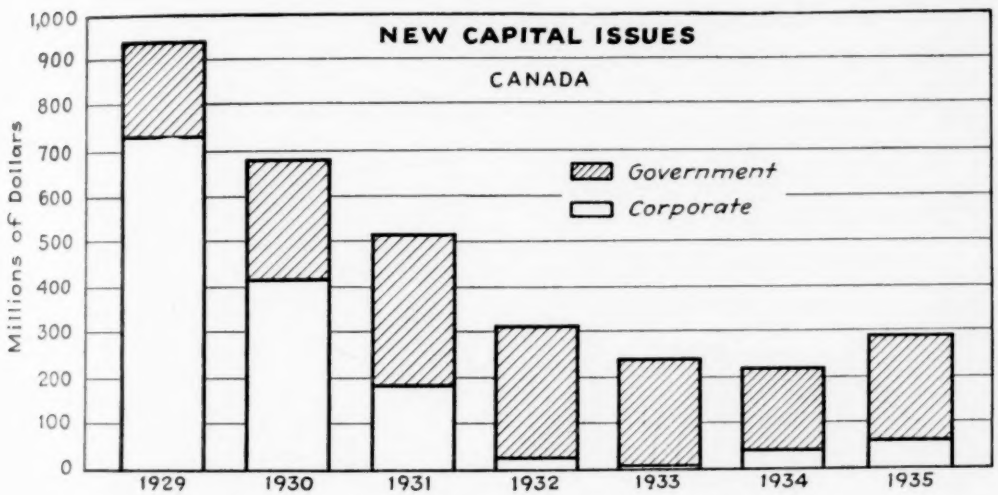
In order to visualize the significant changes which have occurred since 1929, it will be necessary to consider the statistical record of volume changes in new capital financing, as well as to observe changes which have occurred within the series of total new financing. The accompanying chart has been constructed from estimates of new capital financing only; conversion, refunding, and investment trust issues being excluded. These estimates are based largely upon flotations of which a public record has been made. The data of the years 1929 to 1934 were compiled by the *Financial Post* upon estimates made by certain Canadian investment houses. Data for 1935 were supplied by the Dominion Bureau of Statistics.

Although 1929 is not to be considered a normal year, it is significant to note the major changes in the capital market

since that year. The volume of new capital issues fell from approximately $939,000,000, of which over 40% was in the form of stock, to a low point of $217,000,000 in 1934, a total made up almost entirely of bond issues. This represents a decline over that period of more than 75%. Far more significant, however, is the fact that the decline in new capital issues of corporations the flow of new capital into private industry is concerned, deflation during the depression has been extremely severe, and as yet there are few signs of a recovery of equilibrium.

There is a phase of activity in the capital market, however, which is not reflected in statistics of new financing. In the past year or two there has been a substantial increase in refunding

CHART I



Source: 1929–1934, *Financial Post Year Book;* 1935, Dominion Bureau of Statistics.

was very much more drastic than indicated above. Of the total new capital issues in 1929, approximately $737,600,000, or 79% of the total, was represented by corporate issues. In 1934, corporate financing declined to $43,500,000, representing but 25% of the total. Although a slight recovery is shown in 1935, this is partially accounted for by an increase in the financing of certain religious institutions, which figures are included with corporate issues. The evidence clearly points to the conclusion that so far as operations among Canadian corporations. For example, the Dominion Securities Corporation estimates that total corporate bond flotations in 1935 nearly reached the $100,000,000 mark, representing a substantial increase over the preceding year. The first few months of 1936 have experienced an even higher rate of activity,[1] such financing being predominantly for refunding purposes.

From statistics on new corporate financing in the United States, as published by the *Commercial & Finan-*

[1] Total corporate financing in Canada for the first three months of 1936, as reported by A. E. Ames and Company, amounted to over $112,000,000. The *Commercial & Financial Chronicle* reports that corporate financing in the United States during the same period amounted to $536,000,000, as compared with $112,000,000 during the same period in 1935.

cial Chronicle, it is seen that in spite of a drastic decline in security issues, such decline in financing has proved to be less than that in Canada. The volume of domestic corporate financing fell from $8,038,064,000 in 1929 to $178,258,000 in 1934, a decline of 78%. Whereas stocks made up approximately 74% of the total in 1929, they accounted for a little under 20% in 1934. In 1935, total new corporate financing increased by over 225%.

The extent to which emphasis has shifted to government financing in the United States is indicated by a study made by Joseph B. Hubbard[2] in which it was observed that in the fiscal year 1929–1930, 79% of the total financing was for private enterprise, while in the fiscal year 1933–1934, private financing declined to less than 20% of the total. This latter record was practically duplicated in Canada.

For many years Canada has relied strongly on financial support from outside. This support has come mainly from Great Britain and the United States, the former being the more important in the earlier years. In 1913, of a total foreign investment in Canada[3] of about $2,500,000,000, 74% was made by Great Britain and 18% by the United States. By 1926, the United States had passed Great Britain by accounting for 57% of the total. In 1930, out of a total of over $6,000,000,000 foreign investments, the United States had increased its advantage slightly. By the end of 1934, estimates of total foreign investments had actually increased by about a half billion dollars, the United States accounting for over 60% of the total.

Such shifts in volume and sources of capital imports arise out of many factors, of which exchange fluctuations, establishment of branches, and flight of capital, account largely for the more recent changes. Of far greater significance in this study, however, is a consideration of the reception received in the offering of new capital issues since 1929. In Table I is an analysis of the distribution of new capital issues by markets for the years 1929 to 1935.

TABLE I

PERCENTAGE OF CANADIAN CAPITAL ISSUES (NEW) OFFERED IN VARIOUS MARKETS

	1929	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*
Canada	58.4	58.7	75.7	85.2	68.2	80.8	100.
United States	32.6	38.0	22.3	9.7			
Great Britain	8.6	3.2	2.0	4.9	31.2	20.0	
Other Countries	0.4	0.1		0.2			

It should be noted that of the total new capital issues floated in 1929, 41% was placed outside Canada. The United States was by far the more important of the two principal markets, 77% of total foreign flotations being placed there. By 1934, however, Canada was called upon to supply 80% of the new capital raised. The balance was supplied by Great Britain, the United States failing to absorb a single new issue in 1933 or 1934. In 1935, although there was over $100,000,000 of refunding operations in New York, Canada provided all capital required to finance the new capital issues of that year.

That Canada has been able to meet the new capital demands during the depression, when much of the external support was withdrawn and investor confidence everywhere was seriously undermined, is indicated by the fact that long-term interest rates have declined substantially since 1929. New Dominion government issues, which have bulked large in comparison to all others in the later years of the

[2] *Review of Economic Statistics*, September 15, 1934, pp. 189–192.

[3] *Financial Post Business Year Book.*

depression, have been floated at successively lower rates.

Canadian banking statistics give a clue as to an explanation for the foregoing factor. Bank returns show that at the close of 1929 total holdings of securities by all banks amounted to less than $450,000,000, of which 66% was made up of Dominion and Provincial issues. Only 13% could be classed as private issues, comprised largely of railway issues. By February 29, 1936, total investments had increased to over $1,265,000,000. This increase has been entirely accounted for by the increased holdings of various public issues. The extent of the support given to government financing is indicated by comparing the above increase to the total volume of new public issues between the years 1929 and 1935 of approximately $1,500,000,000.

Factors Influencing the Volume of New Issues

It is natural that a decline in the volume of new corporate financing should occur during a period of business stagnation. However, it is not easy to explain why there has not been a larger degree of recovery in the flow of capital into private enterprise in the past two or three years. In seeking an explanation, both supply and demand factors must be considered, although it may prove difficult to determine where emphasis should be placed.

On the side of demand for new capital, it should be pointed out that, as in the United States, Canadian corporations carried out extensive financing prior to 1930, enabling them to enter the depression with strong financial reserves. Furthermore, the need for new capital has been greatly reduced by falling prices and declining business activity. This is reflected in the decline in total current bank loans from $1,403,000,000 at the close of 1929 to $741,592,000 as of February 29, 1936. On the other hand, most Canadian corporations have suffered severe deflation of earning power, only partially reflected in corporate dividend payments, which fell from a high point of $284,641,548 in 1930 to a low point of $134,679,359 in 1933. With a return of higher prices, especially for raw materials, and an increase in the physical volume of business, it would seem that excess working capital reserves would be quickly absorbed.

On the side of supply of funds in the capital market, equally significant developments may be observed. Of first importance is the reëstablishment of investor confidence, which has been severely shaken since 1929. In common with those of other countries, Canadian security prices suffered heavy declines during the depression. Since early 1933, however, such prices have shown substantial recovery. By the end of 1935, approximately a third of the declines since 1929 have been wiped out. On the other hand, continuing defaults remain an influence which may serve to discourage restoration of confidence. A study made by the *Financial Post* of corporate defaults in Canada since 1929 not only suggests the extent to which corporations have suffered financial embarrassment but indicates that the problem arising out of defaults is yet largely to be solved. The statistics in Table II, compiled by the *Post*, show total corporate defaults by years, and are exclusive of sinking fund defaults.

As pointed out in this study, total defaults of $532,431,030 constitute approximately 25% of total company indebtedness of $2,097,515,099, as estimated by the Dominion Bureau of Statistics based on records compiled for

the Banking and Commerce Committee of the House of Commons in 1933. In number of defaults, real estate corporations head the list. In financial importance, however, defaults by pulp and paper companies head the list, accounting for about 40% of the total issues defaulted as at the close of 1934.

TABLE II

CANADIAN CORPORATE INDEBTEDNESS UPON WHICH DEFAULTS HAVE OCCURRED

1930	$ 19,267,500
1931	179,853,020
1932	235,653,995
1933	65,064,715
1934	10,915,600
1935	21,676,200
Total	$532,431,030

Although a great many of the companies have successfully adjusted their affairs, it is significant to note that over 50% of the total issues defaulted in the six-year period are yet to be taken out of trustee control. The significance of this record of financial distress lies in the fact that the task of clearing up the wreckage of the depression is yet to be completed and, judging from the progress being made at present in a number of reorganizations, the depressing influence of such adjustments will remain for some time to come.

Company Legislation

Another factor which may have a bearing on the recovery of the capital market is the past and possible future security legislation. Canada experienced somewhat the same demands for a "new deal" for the investor as occurred in the United States. The problem was tackled at Ottawa in 1934 when a revision of the Dominion Companies Act was effected. Inasmuch as constitutional obstacles prevent the federal government from enforcing uniformity of legislation over all provinces, it had to be satisfied with an attempt to set an example in federal legislation.

Since the 1934 revision of the Companies Act was not considered drastic enough, especially in that certain important provisions could be evaded, a second attack on the problem was made within a year. The Price Spreads Commission, organized at Ottawa to undertake a study of business and financial practices in Canada, gave much time to a study of the need for further change. The commission report, which was published early in 1935, called for such drastic action that it was feared that resulting legislation would prove far too restrictive. As finally passed, however, the legislation does not appear unduly extreme, even though much was borrowed from American and British company legislation.

The latest development has been a conference in Ottawa between provincial premiers and federal officials, called for the purpose of devising plans whereby the coöperation of all provinces can be enlisted in securing uniform company legislation. If such a step succeeds, it is likely that the present Dominion Companies Act will serve as a model for general adoption. Although such action may slow up certain kinds of flotations, it can hardly be classed as a serious handicap to a recovery of normal financing.

Foreign Capital in Canada

Another consideration in the analysis of factors influencing recovery in the capital market is the question of foreign financial support. It has already been noted that the flotation of new capital issues in foreign countries has been largely eliminated since the early years of the depression. Nevertheless, it must not be overlooked that in

regard to the import and export of capital for general investment purposes, there has been an actual increase in the amount of foreign capital in Canada during the depression. In 1935 there was a net importation of capital on this account of over $50,000,000.

There is to be noted, however, that an important change occurred in regard to the source of external financial support. Whereas in 1934 purchases of Canadian securities by Great Britain exceeded sales to Canada by $70,000,000, in 1935 this country withdrew $13,000,000 on balance in security transactions with Canadian investors. On the other hand, American purchases in Canada exceeded sales to Canada by $68,000,000, thus representing a substantial net increase in foreign investments in Canada during 1935.

The continued influx of foreign capital into Canada, though not arising from new capital investments, is encouraging evidence of foreign interest in Canadian enterprise. Nevertheless, developments of the past few years reflect certain disturbances which should be appraised. The withdrawal of British capital is attributed largely to the fact that Canada's credit has been seriously impaired in that market. There has been a series of developments in recent years which has caused many to doubt that one's capital is really safe in Canada. Primarily responsible for such loss of confidence, it is held, are the threatened conversion of Vancouver bonds, repudiation of Ontario hydro contracts, railway deficits, and social credit in Alberta. Another influence which is difficult to measure is the movements of the Canadian dollar in foreign exchange.

It is not to be presumed, however, that these developments will permanently injure the credit of the Dominion. Each occurrence is fairly isolated, and even in the case of the most recent and perhaps most serious development, the first default on record of a provincial obligation (Alberta), there is reason to believe that repercussions will be largely confined to that province. Inasmuch as the default could have been averted by the acceptance of federal assistance, it is held by some that the unwillingness of the federal government to back down on its demands for a certain degree of supervision over the financial affairs of the borrower tends to strengthen the national credit of Canada.

The influx of capital from the United States, though small and the result of purchases of securities on the open market, gives evidence of a lesser degree of concern over developments in Canada than that shown in Great Britain. One authority in the United States pointed out that, in his opinion, Canada's credit in the United States stood relatively high.[4] This observation was made from an analysis of dollar bond defaults of foreign countries made by the Institute of International Finance of New York. However, the real test will come when new capital issues, especially of Canadian corporations, are offered on the New York market. It is to be remembered that not a single new capital issue was floated in the United States during 1935. Furthermore, there is yet to be determined the extent to which United States legislation will prove an obstacle to financing in that market.

Government Financing

Finally, it is important to consider the extent to which government financing has a bearing on the capital market.

[4] Carson, Ferdinand, *Quarterly Review of Commerce* (University of Western Ontario), Fall, 1935.

It will be recalled that by the years 1934–1935, new borrowings by public bodies in Canada constituted approximately 80% of total new financing, whereas in 1929 they accounted for only a little over 20%. Furthermore, it should be pointed out that the annual volume of government borrowing increased during the depression, rising from $201,600,000 in 1929 to $329,560,000 in 1931. In 1935, the total stood at $237,000,000.

Breaking down the annual totals, it is found that of the total increase of Canada's public debt between 1929 and 1935, amounting to $1,426,000,000, approximately 80% is accounted for by the federal government. In analyzing the causes of this large increase in the national debt, it is found that ordinary expenditures have been kept reasonably close to ordinary revenues. On the other hand, substantial sums have been expended to finance capital expenditures and to provide financial assistance to various provinces. But most important have been relief expenditures and the national railway deficits. The latter may be considered the most serious of the problems faced by the federal government, for not only has it contributed most toward unbalancing the national budget, but it represents a factor very difficult to control. That it continues to occupy first place among present major national questions is indicated by the fact that the Canadian National Railway, in its recent annual report on 1935 operations, showed a net deficit of $115,300,000, the highest in the company's history, in spite of the fact that gross revenues increased during the year. The seriousness of the problem is further reflected by the following remarks made recently by the president of one of Canada's leading banks:

> During the past ten years the guaranteed debt of the C.N.R. has increased $405,000,000, grants to cover deficits have amounted to $153,000,000, while unpaid interest upon loans from the Dominion Government has increased $329,000,000, an aggregate addition of $887,000,000 to the direct and indirect debt of the Dominion.

The nature and extent of government financing since 1929 suggest two factors which have a bearing on the capital market. The large volume of new financing required by government deficits has meant that such financing has dominated the new capital market to an unusual degree. It should be recognized, however, that the support of the Canadian banks has been such as to relieve the strain, and that money market conditions have continued very easy. Nevertheless, there is a limit to such expansion and, as the demand for capital by private enterprise commences to be felt, the capital market may take on a different complexion. A second problem arises out of the fact that such large and continuous government deficits mean high and mounting taxation. Business men declare that this not only serves to discourage the investment of private capital, but tends to destroy initiative on the part of prospective users of capital.

The return of the Liberal party to power is considered by some to have an important bearing on the immediate outlook. The King government took office last fall with promises of vigorous steps toward government economy. That it intends to carry out such promises is indicated by the fact that budgeted expenditures for the current year have been pared $12,000,000 below the same budget a year ago. Reorganization in the administration of relief gives promise of further economy.

On the other hand, these steps appear somewhat inconsequential in the light of the importance of the railway problem. Although the government gives evidence of the appreciation of the seriousness of the situation, it appears that it does not favor unification or amalgamation of the two railway systems to eliminate what seems to be wasteful duplication and costly competition. In regard to the present national debt, there has been some discussion of a vast conversion scheme for all public debt, similar to that undertaken in Great Britain. But such a step is difficult, especially when large amounts of government obligations are held abroad. Judging from reactions in the bond market to such proposals, it might be argued that savings realizable from conversion may be quickly wiped out through losses of credit standing.

Conclusion

The statistical record of developments in the Canadian capital market since 1929 gives unmistakable evidence of a sharp curtailment in the flow of new capital into industry and commerce. Although there is much to account for a decline in the demand for new capital by corporations, it is apparent that much change has occurred on the supply side of the market. It is important to observe that these developments represent an important phase of economic recovery in Canada. A genuine recovery, which implies a widespread increase in capital expenditure in private industry, with its resultant increased demand for labor and materials, must be accompanied by a restoration of more normal conditions in the capital market. Inasmuch as many influences operating at the present time will serve to retard such a restoration of balance for some time, the conclusion that Canada's economic recovery cannot but proceed slowly and only as certain obstacles are overcome, seems inescapable.

ECONOMIC PLANNING IN RECENT LITERATURE

BY SUMNER H. SLICHTER

WHAT is meant by planning? Some of its advocates are strikingly vague. Mr. Soule says that "social planning is not a hard-and-fast completely predetermined scheme," but "a method," "a way of attacking problems." Successful planning, he says, "is a process in which whole communities must participate" and which demands that they have "the will to coöperate for common ends" (p. 230).[1] Miss VanKleeck describes planning "as the discovery of the laws of technical and scientific production for the maximum standards of living and for lifting the structure of culture and civilization progressively" (p. 242).[2] This seems to include pretty much everything. Among the things incidentally required by planning, according to Miss VanKleeck, is the "elimination of the 'forces' whereby society's institutions become instruments of exploitation of one group by another group, the power to exploit arising out of private possessions of the means of production, which is clearly incompatible with a social economic plan for the welfare of the community as a whole" (p. 242). More help is obtained from Mr. Cole and Mrs. Wootton. "An economic plan," says Mr. Cole, "is, in its essence, a plan for securing a right distribution of the available resources of production" (p. 26).[3] A right distribution of resources is one that "is rightly adjusted to some standard of consumption" (p. 47).[4] Mrs. Wootton points out that the basic difference between a planned and an unplanned economy is the scope of particular decisions. In every economic system decisions and plans are made by individuals and groups, but in an unplanned economy the area over which particular wills have control falls short of the point at which the whole may be said to be willed. A planned economy, then, is one in which there is a *general* economic plan which at least goes so far as to determine what is produced and in what quantities and in what proportions.

In theory, at least, one may distinguish between planning production and planning other things, such as the distribution of income. In practice this is a distinction which it would be virtually impossible to maintain, and none of the planners seem to be interested in maintaining it. Indeed, there is little point in planning production except for the purpose of producing a given standard of living. Mr. Cole, in particular, is very explicit on the point that a plan for production must be made in the light of some accepted standard of consumption.

Sometimes the planners say that planning is necessary because of the severe depressions which characterize industry as we know it. Miss Fledderus and Miss VanKleeck, for example, assert that planning has arisen because of "the paradox of poverty in the midst of plenty" (p. ix). Undoubtedly

[1] Soule, George, *A Planned Society*. New York: Macmillan Company, 1935. 295 pp. 90 cents.

[2] VanKleeck, Mary, and Fledderus, Mary L., *On Economic Planning*. New York: Covici, Friede, Inc., 1935. 275 pp. $3.00.

[3] Cole, G. H. D., *Economic Planning*. New York: Alfred Knopf, 1935. 384 pp. $3.00.

[4] Wootton, Barbara, *Plan or No Plan*. New York: Farrar and Rinehart, 1935. 360 pp. $1.60.

the long and severe depression is the occasion for much of the current discussion of planning. A perusal of the plans, however, indicates that the authors have much more in mind than stabilizing production. They point out that private enterprise has a chronic tendency to produce at less than capacity because business concerns dare not take the risk of producing very much in anticipation of demand. They point out that the process of investment under private capitalism is a wasteful one and, because of various circumstances, often results in the wasteful duplication of facilities. They argue that the cost of industrial change is unnecessarily high because many of the costs do not fall upon the persons who gain the benefits of changes. Some of the planners, however, particularly Mr. Cole and Mrs. Wootton, base the case for planning upon the fact that the market cannot balance the efforts and satisfactions of industrial activity. This is an inevitable result of the fact that the sensations of two persons are incommensurable. Mr. Cole and Mrs. Wootton do not, of course, argue that planning really solves this problem. They simply assert that no particular significance should be attached to the balance between money prices and costs which the market establishes, and they assert that a plan constructed by a properly constituted body is a better method of weighing the real costs of producing goods and the satisfactions which goods yield. They remind us that no community has ever been content to let effective demand be the sole guide of production; that every community provides certain services which it thinks good for its citizens beyond the point to which individuals would be prepared to pay the market price; and that every community commands and provides certain things which its citizens cannot individually demand at all. Planning then becomes simply an extension of tried and proved practices.

Some of the planners believe that planning could be combined with the private ownership and operation of plants. Mr. Soule is an example. He would establish a National Economic Board of qualified experts representing the nation as a whole. This Board "would work out a general plan for raising the lowest incomes and regulating the flow of investment and credit." One of its first duties would be to help various industries establish the best form of organization for themselves. It would, for instance, call together soft coal mine owners, consumers of coal, coal technicians, and organized labor in coal, and say (in the words of Mr. Soule): "Your industry must be organized to pay higher wages without unduly high prices and to give steady employment. We give you two years to produce a proposal. When your proposal is ready, we will either approve it or disapprove it. If you do not produce a plan which we can approve, we are instructed by Congress to make one of our own." The Board, according to Mr. Soule, would talk to the construction industry and other industries in the same way. Security issues would be subject to an investment division of the National Planning Board and the Board would regulate the use of corporate savings—possibly by taxing them away and allocating them. Mr. Soule does not seem to appreciate that the most difficult part of regulating investment is to prevent a contraction in investment. The Board also would have the job of getting chain stores, department stores, and mail order houses to combine to reduce

distributive waste. For some curious reason the small independent retailers who might object to cuts in distributive waste and reductions in mark-ups are not mentioned. Other incidental chores of the Board would be to reduce the frequency of style changes and to bring about the abolition of the protective tariff which Mr. Soule says "is clearly unjust and fits into no plan except that of a few favored manufacturers." The sugar raisers, wool growers, and dairy farmers might object to this.

The proposal to combine planning with capitalism raises several crucial questions which Mr. Soule fails to discuss. Would not Mr. Soule's National Economic Board inevitably become the tool of well-organized producer groups, the trade unionists, the farmers, the employers, who would use it as an instrument to help them restrict production and exploit the community? In other words, under capitalism Mr. Soule's Board is likely to produce, not a national plan, but a multitude of control schemes. On this point, the excellent collection of papers edited by Mr. Holland is illuminating.[5] All of the schemes depend for their success upon restriction. And even if Mr. Soule's Board could escape the domination of special interests, how could it compel private enterprise to adhere to a national plan of production? Would enterprises be taxed for failure to produce a stipulated amount? Suppose that they did produce the required amounts, but were compelled to sell at a loss. How would they be compensated without destroying their incentive to adjust their costs to the state of demand and to improve their products and marketing practices? Willingness of savers to invest under such a scheme as Mr. Soule proposes would obviously depend upon their confidence in the competency and fairness of the Planning Board. If savers lacked such confidence and if even high interest rates failed to persuade them to risk their principal by putting it under the control of the Board, how would Mr. Soule induce investment? None of these questions is discussed in his book.

Sir William Beveridge, Miss Fledderus, Miss VanKleeck, Mr. Cole, and Mrs. Wootton all seem convinced that centrally planned production is incompatible with private capitalism. In discussing planning, therefore, we are really discussing one aspect of the operation of socialism. Sir William Beveridge urges against planning under socialism an objection which is somewhat a favorite of many economists, namely, that without private ownership in the means of production national planning of production would be impossible.[6] Since there would be no capital market and hence no market rate of interest, the planning authority could not determine whether the means of production were being used to the best advantage and its decisions would be arbitrary (p. 11). This argument assumes, among other things, that saving is done by collective units. Even socialism, however, does not preclude private saving and a capital market producing a rate of interest which represents the willingness of individuals to save and which could be accepted by the planners as a guide in determining what to produce. As a practical matter, however, there is slim chance that a

[5] Holland, W. L., Editor, *Commodity Control in the Pacific Area.* Stanford University: Stanford University Press, 1935. 449 pp. $5.00.

[6] Beveridge, Sir William, *Planning Under Socialism and Other Addresses.* New York: Longmans, Green & Company, 1936. 155 pp. $1.60.

planning authority would begin by adopting a pricing policy which would keep in existence the present capital market, compel the authority to acquire a large part of its investment funds from the open market, and would, therefore, afford a reasonable test of the willingness of people to save. Furthermore, as a practical rather than theoretical proposition, Sir William's objection may be extended to include wages, because there is little likelihood that wages under socialism would be sufficiently flexible to afford a reliable test of the occupational preferences of the population. Public authorities are not likely to pursue the policy of raising and lowering wages in response to changes in the labor supply. Sir William goes too far, however, when he argues that the absence of free markets would prevent "rational" decisions by the plan makers. The decisions might be of such a nature as to require a system of rationing, but they might none the less be quite "rational" in the sense that they represented an appropriate means of achieving the objectives which the planners wished to achieve or were instructed to achieve.

This brings us to a consideration of the rôle which prices and markets would play under planning. All of the planners assign them quite a subordinate rôle. Mrs. Wootton argues that it is silly to set up a cumbersome planning apparatus if prices are permitted really to determine what is produced. But this is not quite true. One may argue that a planned economy which constantly adjusted its production program in accordance with shifts in demand would be infinitely superior to present arrangements for the simple reason that it would be better able to assume the risks of producing in advance of demand and would be compelled less than private enterprises to restrict production in the face of uncertainties in demand. And Mrs. Wootton seems disposed to go quite far in permitting prices to move for the purpose of avoiding rationing. Mr. Cole, however, is not much interested in this sort of thing. He would have a tentative budget of production drawn up by a somewhat cumbersome process in which experts and representatives of consumers and producers would participate and submitted by a Minister of Planning to the legislature for debate, modification, and approval. This procedure of determining what people are to eat, wear, and do does not appeal to me. Perhaps I am prejudiced by the budget prepared in 1934 by a group of engineers, agronomists, and technicians identified with the National Survey of Potential Product Capacity and reprinted as an appendix to the book edited by Miss Fledderus and Miss VanKleeck (pp. 218, 274–275). This budget purports to show "what consumer goods and services could be expected if production were directed toward the satisfaction of the needs and *reasonable* wants of the population" (italics mine). I omit a detailed criticism of the estimates of potential capacity. In view of the fact that unemployment during 1929 was less than 10%, it is not apparent where the labor would have been obtained to produce the 85% increase in consumer goods which the technicians estimated as possible. Let us see, however, what kind of a budget the engineers, the agronomists, and other technicians regard as suited to the "reasonable wants" of the population. They feel, for example, that we should increase our movie admissions from 5 billion to 7½ billion a year, although the industry has a capacity of 12 billion

admissions. One may ask "why an increase at all?" or "why an increase of only 50%?" On the other hand, they would have us cut our lard consumption from 2,598,000,000 pounds to 875,000,000 pounds, but more than double our consumption of cured and canned fish. At the same time they would not permit us to increase our consumption of confectionery and would compel us to cut our consumption of sugar from about 11 billion pounds to 7½ billion. We might insist on more sugar and confectionery rather than more cured and canned fish. They believe that the men should nearly triple their consumption of sleeping apparel and bath robes, but increase their consumption of hosiery by only about 5%. This would require an expansion of 20% in the capacity of the sleeping apparel and bath robe industry, but would still leave the men's hosiery industry operating at only three-quarter's capacity. The hosiery workers and the women who darn socks might have something to say about this. The engineers and the agronomists wish the men to more than double their consumption of suits and almost double their consumption of extra trousers and knickers, but they allow the women to increase their consumption of dresses only by one-third, a rate which would still leave the dress industry operating at only half capacity. Evidently the technicians do not like cake and macaroni, because they would have us cut our consumption of those by two-thirds. They are also prejudiced against biscuits and breakfast foods, each of which would also be cut about two-thirds. I am especially annoyed by their proposal that we cut our consumption of nuts in half. Even doubling our rations of cured and canned fish seems poor compensation for this. One leaves this budget with the conviction that the old fashioned market, despite its inability to measure the incommensurable sensations of buyers and sellers, is not such a bad device after all.

It is easy to smile at the well-meaning schemes of the planners to regiment us and to be alarmed at the probable effects upon the human spirit of such a complete organization of human beings. The planners, however, are dealing with real issues, issues which cannot be met by doing nothing. Indeed, *laissez faire* seems to be a policy which can be advocated only by the Communists who believe in salvation by catastrophe. But the Communists are incurable optimists. For although they believe that a catastrophe is inevitable, they also believe that it will be exactly the right sort of catastrophe and that from it (by an extraordinary stroke of luck which I have never been able to understand) will emerge the ideal society. Those of us who are less optimistic than the Communists must do something about the fluctuating willingness of business men to make commitments. The business man cannot be sure that an expenditure made today will come back in the form of income tomorrow. Sometimes the outlook is bright and sometimes it is dark. Consequently, the business man's willingness to take chances varies. When many business men adopt a wait-and-see attitude, there is a substantial drop in output and millions of men lose their jobs. Such a drop in production and rise in unemployment become matters of national concern. The government finds itself compelled, willy-nilly, to make the restoration of production and employment an object of public policy. It takes steps to restore production and employment. This means that the government becomes a sort of gen-

eral economic manager. No one particularly intends it, no one particularly plans it or desires it; the government simply finds it necessary by force of circumstances to assume a new function. Mr. Hoover's experience is illuminating. He is perhaps the leading opponent of planning in the United States, and yet, next to Mr. Roosevelt, he has undoubtedly been our leading practitioner of planning.

When the depression broke in 1929, Mr. Hoover promptly worked out a plan for dealing with it. It was a rather definite plan and it seems to have been well thought out. On the whole it was a good plan and it would have worked in 1924 or 1927. The only trouble with it was that it was based on a faulty premise, namely, that the depression would not be severe. Mr. Hoover's plan had five main parts. First, he proposed to steady the price level by persuading employers to avoid cuts in wages, the most important element in costs. Second, he proposed to bolster the prices of agricultural products by government support to markets. It happened that he had handy for this purpose the newly-established Farm Board. Third, he proposed to keep up the general volume of business by persuading corporations to go ahead with capital expenditures as if nothing had happened. A well-organized drive to accomplish this purpose was carried out in the spring of 1930, and for a time it was remarkably successful. Fourth, he proposed to support business by avoiding cuts in the volume of public construction. Finally, he proposed to reduce distress selling by maintaining easy conditions in the money market.

Thus in a sense it may be said that national economic planning is already here. It does not take the form of budgeted production, but it does involve the assumption by the government of a large measure of responsibility for maintaining production and employment. The government, it is true, has pursued some policies which have retarded rather than helped the absorption of the unemployed, but there is encouragement in the fact that its mistakes are attributable in large measure to inexperience. For three years the government has been trying to restore production and employment by making business enterprises spend their large cash balances. First it used currency depreciation to scare managements into the belief that their dollars would be worth less in the future. This produced a temporary buying spurt in the summer of 1933, but after inventories became fairly large this spurt stopped. About the same time the government tried to make enterprises spend more by compelling them through the NRA to pay higher wages. A considerable increase in pay rolls followed, but the very rise in labor costs limited the volume of expenditures which concerns were willing to make. Recently a tax bill has been enacted for the purpose of forcing enterprises to disburse as dividends a large part of the money which they are not willing to invest. So long as managers remain convinced that it is wise to keep their concerns highly liquid, the tax scheme will not work out as intended. Dividend disbursements may be increased to avoid a heavy tax on undistributed earnings, but if they are, the cash position of enterprises will be protected by retention of a large proportion of depreciation allowances in cash form.

This experience is illuminating because it indicates that the success of the government in performing the new

function of economic management depends upon its ability to distinguish between the results which can be obtained by fear and compulsion and those which can be obtained only by creating confidence and encouraging enterprise. Restoration of production and employment depends upon greater willingness on the part of business men to take chances. They cannot be led to make very large new commitments by either compulsion or fear. They can, however, be *induced* by favorable circumstances to increase commitments. In times of boom the government has the unpopular task of applying the brakes. In times of depression, however, the policy of the government must be to assist in creating the conditions which make business men willing to take chances. This does not preclude the institution of reforms during depression, but it does mean that the more reforms a government institutes, the more careful it should be at the same time to encourage enterprise. It remains to be seen whether democracies will be willing to apply the brakes during booms and deliberately to encourage enterprise during depressions.

FINANCE AND FINANCIAL MANAGEMENT: RECENT PUBLICATIONS

BY A. V. WOODWORTH

THIS group of recent books on finance and investment reflects, among other things, the final approval of the idea of common stocks as investments. One manifestation of this is the discovery that the old hard and fast line between investment and speculation was really largely a figment of the imagination. In the old days one always expected the author of a book on investments to begin by definitions delineating the fields of gambling, speculation, and investment. Even as late as 1931, Sloan, in his valuable contribution, *Everyman and his Common Stocks*,[1] hazards the suggestion that "the time limit of the security purchaser's intent defines his status as between a speculator and an investor." But this group of new books assumes that every investment program is well loaded with common stocks. One author states categorically what most of the others imply, that every investment has in it a definite speculative element. There is no attempt to draw any lines of demarcation.

A corollary of this common stock theory is what Preinreich calls the accrual method of investment accounting. This method bases the computation of income from investments on the increase in the book value of the securities, just as a partnership, not incorporated, estimates its profit at the end of the business period. Part of the increase in value may have come from interest or dividends. But there is also that part of undistributed profit which is shown in the book value. The shareholder, as a partner in business, is entitled to reckon his share of the entire profits of the business as a part of his income.

Carpenter takes practically the same ground when he says that the investor should allow himself a definite rate of interest on his capital investment, and should deduct this from his total capital at the end of the period regardless of the interest return. Angas is thinking along the same line when he says that there are many unnecessary losses every year because people attempt to choose investments with an eye to interest return rather than because of inherent value and prospective appreciation. Shaffner goes one step further and would abolish all bonds. While the happy days of the New Era gave inklings of these ideas, their definite expression as the conclusions from study and research is a new note.

A second conclusion which this group of the new books seems to have reached is that you can't do it yourself. The writers recognize that not one but many influences are at work to produce the up and down swings of the stock market and the movements of general business. The final summing up of the whole matter is that the investor must use every care in selecting an expert to handle the matter for him. Some of the writers go a step further and say definitely that the best bet is the investment counselor.

Running through much of the literature is the thought implied or expressed that the government can and should solve many if not most of our difficul-

[1] Sloan, Laurence H., *Everyman and His Common Stocks*. New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1931.

ties. Nobody is so hopeful as to believe that the government has yet found the remedy for our investment weaknesses. But it is pointed out that never before has our government undertaken to do so much for the average investor. The implication is that if they will only keep on trying all will ultimately be well. It is one of the curiosities of reform literature how the idea persists that government is an abstract group of demi-gods. Thereby they are supposed to be endowed with superhuman wisdom. It would certainly be a mistake to try to return to the capitalist's Elysian fields of *laissez-faire*, but that does not necessarily imply that the only escape is through governmental regulation.

The books divide themselves roughly into three main groups. The first deals with the how and why of security price changes. The second is directly concerned with security analysis. The last group is more miscellaneous. It covers, however, some of the methodological aspects of handling investments.

The How and Why of Security Price Changes

War and the Private Investor,[2] by Eugene Staley, is part of a larger project for investigating the causes of war. The plan was initiated in 1927 by the Social Science Research Committee at the University of Chicago. The stereotyped notion in much historical writing is that capitalists first seek new opportunities for possible investment in the weak and backward areas. Then when hostilities with the local governments arise, or war is threatened with rival imperial powers, they turn to their governments for diplomatic or armed assistance, as the case may require.

[2] Staley, Eugene, *War and the Private Investor*. Garden City, New York: Doubleday, Doran & Co., 1935. 587 pp. $4.50.

Professor Staley concludes that while this may be true in some cases, the theory tends in the main to put the cart before the horse. "Foreign investments," he finds, "have been considerably more useful as an aid and protection to navies than navies have been as an aid and protection to foreign investments." Elsewhere he says, "Private investments seeking purely business advantage have rarely of themselves brought great powers into serious political clashes."

It is not, however, in support of this, or any other controversial thesis, that the book was written. On the contrary, the method was one of direct historical research and the conclusions were drawn for the collected material.

All through the book there is a wealth of illustrative historical material which is fascinating reading for the historian and instructive to the investment banker, as well as the investor. "Had this material been written up in the form in which it was collected," says the author, "the chapters of this book would have been a series of case studies: The Manchurian Railways and the Powers, The United Fruit Company in Central America, The Rumanian Oil Controversy, Politics and Investment in Nicaragua." Obviously we have here considerable material for a course in Business and Politics.

Mr. Staley finds that national political objectives are pretty much out of harmony with a world closely integrated by modern communications and economic exchanges. Mr. Staley sees the tendency for economic changes to run ahead of political adjustments as part of the changing development from national to world control. In view of this, his final solution is a world investment commission; a world commercial court; international corpora-

tions; a world investment bank. And all these when we seem to see the League of Nations crumpling into an untidy heap at the first touch of realism!

In order to present a program for the regulation of the markets prior to the passage of the Securities and Exchange Act, the Twentieth Century Fund inaugurated a comprehensive investigation of the rôle security markets play in American economic life.[3] A preliminary summary was published in 1934 under the title of *Stock Market Control.* This larger volume presents the full text of the research findings. Many of the weaknesses discussed which seemed to demand reform have been corrected as a result of the passage of the Securities and Exchange Act. In Chapter XVIII an attempt has been made to assess the changes which have occurred since the passage of the act.

As to the practise of buying on a margin, the report comes to the conclusion that, if such buying could be confined to expert traders, prices would discount future effects of current events with considerable accuracy. Unfortunately, due to various types of manipulation, this is not the case. How, then, can the unfortunate public, which insists on coming into the market at the top, be protected? The report concludes that a successful mode of regulation must seek to limit the debit balances of traders, varying the limit independently of the market price but in relation to the earnings per share of the stocks used as collateral.

Short selling is of sufficient value as a market regulator so that it should be permitted. But the brokers should report once a month by stocks the number of shares which can be or are being used as a basis for borrowing, since a knowledge of these shares in each issue would be of material help to the exchange in judging whether short selling in any particular stock were unduly large. There is also a valuable chapter on manipulation, giving examples of pool manipulation and an appraisal of manipulation practices.

Part IV, "On Informing the Investor," deals first with the corporate accounting and reporting. The conclusions of this section are pretty pessimistic. The Exchange has been making vigorous efforts among the listed companies to eliminate some of the worst evils. So far there has been only moderate coöperation. The deplorable state of corporation law makes it almost impossible to bring effective pressure against companies that prefer to continue their former practices. The chapter on "Sources of Information and Advice" covers the manuals, financial services, investment counsel, and the like; but in a not too critical spirit.

Their final conclusion is, however, that the nation has been paying too high a price for even the most essential services which the security exchanges render. The unduly large volume of uncontrolled speculation plus the frequent interference with the free play of supply and demand by manipulative activity, the report states, interferes with the performance of the proper functions of security exchanges, and hence affects the national economy unfavorably.

Whether the conclusions the committee reaches may or may not offend one's predilections, the book is not to be disregarded. It represents diligent research which is presented to the reader for his own analysis if he so prefers. It is interesting to note in the final summary the tendency to look to the Federal

[3] *The Security Markets.* New York: Twentieth Century Fund, 1935. 886 pp. $5.00.

Government as the last word in wisdom and justice; and one may say that, in its implications, the book holds up to Washington a council of perfection.

There was a time when the historical background of a subject was considered important. The direction from which one had come was believed to be some guide in showing the direction in which one was headed. Evidently Dr. Shaffner[4] holds this view in common with the editors of *The Security Markets*. His approach to the investment problem is definitely historical rather than didactic. The most important thing an investor can do is to see clearly the nature of the pitfalls which confront his investment efforts.

One of these pitfalls, he believes, is the mortgage bond, and he devotes 100 pages to a discussion of "The Fallacy of Safety in Mortgage Bonds." The discussion of the historical development of the mortgage bond makes an interesting study, though his contention that the law changes in such a way as to favor those who already enjoy a superior position economically does not seem to be clearly proved. His point, however, that the mortgage bond has often proved a broken reed needs no proving to those who have had the misfortune to go through two or three drastic reorganizations. His final conclusion on this matter is that mortgage bonds should be abolished. Their real value consists in the earning power of the company. So long as this continues, the investor is better off as a shareholder where he can participate in advancing profits. When earning power ceases, the bondholder has nothing except the right to participate in the junk value of the property.

[4] Shaffner, F. I., *The Problem of Investment*. New York: John Wiley & Sons, 1936. 357 pp. $3.00.

How, then, can the investor be protected? Here follows a discussion of what has been done along this line. The legal protection from incorporation is practically nil. The various state and Federal attempts at safeguarding the investor he finds often valuable but never adequate. Like Mr. Carpenter in his *Letters*[5] Dr. Shaffner concludes that the question is so complex that only the expert, devoting his entire time to the problem, can hope to come somewhere near the answer. And even these have, so far, made a pretty poor showing. Nevertheless he believes that the investment counsel probably has the greatest protective possibilities.

Mr. Carpenter has produced an unusually successful book on a hackneyed subject. This is not due to some world-stirring economic or social contribution. It is because the author is capable of clear thinking and, as a concomitant thereto, of straightforward, interesting composition.

He divides his book into four main series of letters. The first is a statement of the investor's problem. The primary job is to anticipate, with a fair degree of accuracy, the long investment trends and to shift to that type of security which will best protect your interests. But after you have decided, let us say, that it is the time to buy common stocks you have by no means solved your problem of what to buy. Mr. Carpenter points out the surprising fact that while the general average price of the common stocks in twenty-six major industries advanced 220% between 1918 and 1928, steel companies' stocks advanced only 73%; chemical stocks rose only 150%, while automobile accessory companies rose

[5] Carpenter, H. G., *A Successful Investor's Letters to His Son*. New York: Simon & Schuster, 1935. 123 pp. $1.50.

2200%. At the same time stocks of the textile industry declined 12%, and of the sugar industry, 15%. In other words, even at the peak of a great bull market it would have been possible for the investor in common stocks to find himself on the wrong side of the ledger.

The second series of letters deals with "Common Mistakes and Misconceptions." After pointing out what everyone knows but few make a part of their investment program, namely that you'll never get rich deferring losses, he comes to a discussion of investment for income. Here he shows, as other writers have also, that the attempt to maintain a standard of investment income during a falling market is pretty sure to lead to unnecessarily large capital losses. The most interesting chapter in this section is entitled "Five Ways to Meet Inflation." And first he gives a clear exposition of inflation. It is, he says, confusing to the average investor for two reasons: first, because the attack comes from a quarter toward which he is accustomed to look for protection—the Federal Government; secondly, because the investor who meets inflation by doing the thing he has been taught as most conservative, *i.e.*, to buy bonds, finds that this is one of the biggest mistakes he could make. "There would seem to be five different kinds of investment by which inflation can be combatted: 1. Real Estate; 2. Foreign bonds; 3. Foreign Common Stocks; 4. American Common Stocks; 5. Commodities." An analysis of these five, however, leads to the conclusions that commodities are probably the best, followed by foreign common stocks and, finally, by domestic common stocks.

He now puts the question squarely to his son: "Do you think you can manage your funds wisely without expert help in view of the wide knowledge and constant watchfulness required?" The answer is, obviously: No. The succeeding letters, therefore, deal with the problem of the sources of investment advice and the approach to successful investment management. He reviews the various sources of investment advice from the banker through the statistical organizations and the investment trusts to the investment counselors. He finds his answer in the intelligently selected investment counselor. Mr. Carpenter has written a clear and intelligent book of investment advice.

L. L. B. Angas, the author of *Investment for Appreciation*,[6] is an Englishman and a graduate of Oxford who has recently moved to New York, where he caught the public eye by the publication of a pamphlet called *The Coming American Boom*. The present volume attempts to set forth the theories and methods upon which he has based his forecasting.

The presentation is hardly in narrative form. Rather it is a collection of rules under various headings for speculative conduct. The text is divided into forty-three chapters, with such headings as Investment Objectives, Cyclical Policy for Bond Investors, How Prices Are Made, Fine Points in Chart Reading, Pyramiding, and the like. The rules in each chapter are clear and concise, but seem to present no startling innovations. He emphasizes the importance of study and research as well as laying down definite rules. But he points out that it is not difficult to learn a sound set of economic principles. Only the man of real character, he says, has the courage to carry them into practice at the crucial moment. In

[6] Angas, L. L. B., *Investment for Appreciation*. New York: Somerset Publishing Company, 1936. 362 pp. $5.00.

other words, what he would say is that it is comparatively easy to buy stocks. Only the man of character can make himself sell when he should.

The Analysis of Investment Securities

The analysis of industrial securities is not a new topic. Many books have been written on it and inevitably they bear a definite family resemblance. The main differences are really in emphasis. And along this line Professor Prime has attempted his contribution.[7] We can, I think, all agree with him when he says, "The investment field needs properly trained security analysts." His special emphasis, however, lies in the further statement that "the operation of economic laws as well as legislative acts has created a demand for analysts whose knowledge goes far deeper than the computation of a ratio, and whose appreciation of psychological and intangible factors is not overshadowed by purely mathematical calculation."

After an introduction on government regulation he turns to the economic aspects and the part played by industrial research in the preëminently successful large corporations. His quotation from the *General Motors Report* of 1934 about the relation between industry and research might with equal force be applied to industry and economics. It is Professor Prime's hope that industry may come to realize more fully the value of research in every economic department of business. In addition he hopes that the investor may appraise the value of these factors in financial analysis.

To illustrate his methods the author gives, in the final chapter, a complete analysis of the Goodyear Tire & Rubber Company. It covers some nineteen printed pages and seems to approach the subject from every possible angle. With a group of elaborate analyses like this on file, the investor could make further comparisons between companies in the same industry and companies in competing industries. Such a file would certainly prepare him to make intelligent investment selections.

The next three books are revisions of standard texts which had become outmoded in these fast-moving days. The new edition of *The Analysis of Financial Statements*[8] is a complete rewriting and rearranging with some 140 pages of additional material. In the preface to his new edition Professor Guthmann says that "the average quality of published reports has measurably improved, and there is promise of more and better information." He certainly has every reason to believe that under President Roosevelt more and better information will be demanded from the public utilities. Perhaps it is because of this that his revision of the public utility sections has been so drastic. The chapters on "Gas Manufacturing Corporations" and the following chapter on "Hydro-Electric Power Companies" have been entirely omitted. In their place is a new chapter entitled "Public Utilities." The new discussion, perhaps in view of the better information in the utility reports, omits considerable detail and enlarges the discussion of the general principles. Another striking change is the omission, in the new edition, of the chapter on ratio analysis, this material being scattered in other parts of the new edition.

[7] Prime, John H., *Analysis of Industrial Securities*. New York: Prentice-Hall, Inc., 1935. 364 pp. $4.00.

[8] Guthmann, Harry G., *The Analysis of Financial Statements*. New York: Prentice-Hall, Inc. 1935. 599 pp. $5.00.

Financial Management[9] is a revision of the book originally published by Professor McKinsey in 1922. His colleague in the University of Chicago, Professor Willard J. Graham, has superintended the revision, and anything that bears Professor McKinsey's name on the title page carries a weight of authority. The early chapters treat of the sources and control of capital. The emphasis is on corporation finance and corporate financial instruments. In view of Professor McKinsey's background, the accounting aspect would naturally be somewhat more stressed than in some of the books on financial management. The book is exceedingly simple and straightforward in method and presentation.

"Badger on Investment," as the old title page reads, has been subject to a thorough revision,[10] presumably under the care of Professor Guthmann, for his name appears on the new title page together with that of Dr. Badger. Much of the book has been rewritten. In particular the chapter on common stock has been greatly enlarged. This now includes a discussion of some of the more recent studies, such as those of Dwight C. Rose and of Carl P. Snyder. The most startling change is the omission of the last three chapters on "Investments and the Business Cycle," only a small portion of this material being included in other chapters.

In general the new edition seems destined to keep its place in the front rank which was so ably maintained by the older edition. In places, tables of illustrative material taken from the period of the New Era are carried over from the former edition. Perhaps more up-to-date statistics would be of no advantage as illustrating the text, but the average student is none the less favorably impressed by Professor Prime's method, for example, of using the figures from the last available corporation reports.

The Mechanics of Investment and Some Others

Mr. Preinreich is a C.P.A. of New York. The approach to his problem in *The Nature of Dividends*[11] is, therefore, that of the accountant. The distribution of corporate wealth, and the portion of it which may properly be considered income, is one of his primary considerations. His objective is to place corporate finance on such a basis that the ordinary accrual method of accounting, as in partnerships, may be directly applied. In this way the shareholders' investment in the actual value of the assets may from time to time be ascertained. He recognizes that this might involve some change in the present methods of corporate accounting and consequently includes a plea for greater uniformity of corporation reports.

Certainly the Twentieth Century Fund Committee in the review spoken of earlier take a pessimistic view of what can be done at present along this line. Does Mr. Preinreich remember the wail of anguish that went up from the railroads of the country when the Interstate Commerce Commission announced a compulsory system of uniform accounting? The industrials fortunately are not yet under the control of a government commission, and

[9] McKinsey, James O., *Financial Management.* Revised by Willard J. Graham. Chicago: American Technical Society, 1935. 561 pp. $3.50.

[10] Badger, Ralph Eastman, and Guthmann, Harry G., *Investment Principles and Practices.* New York: Prentice-Hall, Inc., 1936. 1011 pp. $6.00.

[11] Preinreich, Gabriel A. D., *The Nature of Dividends.* New York: Published by the author, 17 East 42nd Street, 1935. 238 pp. $2.50.

many of them might not do as they are told. Nevertheless, more uniformity in accounting practice is something very much worth while working for.

The Ghost in the Balance Sheet[12] is depreciation and obsolescence. They are ghosts because they are mere bookkeeping items without actual existence. The booklet is a plea for corporations to revise their methods and set up a separate reserve fund instead of following the present method. Mr. Gore's hypothetical case works out admirably as an illustration of the futility of attempting to use in times of stress the depreciation fund buried in the assets.

How can the depreciation fund, made up of the securities affected by the business cycle, be maintained or be resorted to when security prices are low and business needs great?

"The study of the mathematical theory of finance should be of distinct use to the student," says Kenneth P. Williams.[13] But not of the same necessity that it used to be. The simplified tables made the first short cut. The mechanical business machines drove a tunnel through the mountain of mathematical theory. This generation, which is always in a hurry to get things done, can hardly be expected to climb the rugged heights for the mere thrill of seeing what it is all about, when they can reach the goal by merely pressing a few buttons and turning a crank. But someone must have enough knowledge of the principles involved to know what the machine is supposed to do before it is set up. And someone else, let us hope, will care enough about it to be able to check the result and assure us that the canned answer is correct. The volume is arranged for class work where the short-cut devices are not necessarily available. It closes with some fifteen logarithmic tables, which are prepared with great care, based on those of Professor James Glover.

The banks, as well as individuals, have to face their investment problems. The return from investment which banks usually choose has fallen nearer and nearer to the vanishing point. Now the bankers have begun to scan the horizon for that almost forgotten haven—a reasonably safe investment with a reasonable interest return. The personal loan business seems to offer possibilities in this direction.

The authors of *Increasing Personal Loan Business*[14] are R. E. Doan, Director of Public Relations, and G. F. Foley, Assistant Cashier and Manager of the Personal Loan and Savings Department of the Denver National Bank. The book is an attempt to show just how their plan works and what their experience has been over a five-year period. Unfortunately they do not give figures of profit and loss. It seems fair to assume, however, that their losses must have been comparable to those of the Morris Plan. They have adopted the Morris Plan custom of demanding two acceptable endorsers unless satisfactory collateral is furnished.

Not content with the regular personal loans, they decided to branch out one step further. They arranged to collect on the personal loan basis the overdue accounts of the big department stores. The method was simple enough. Any customer having an overdue account received in his monthly bill from the store a leaflet directing him to the

[12] Gore, Challis, *The Ghost in the Balance Sheet.* New York: Scientific Press, 1935. 51 pp. $1.00

[13] Williams, Kenneth P., *The Mathematical Theory of Finance.* New York: The Macmillan Company, 1935. 292 pp. $2.75.

[14] Doan, R. E., and Foley, G. F., *Increasing Personal Loan Business.* Cambridge: Bankers Publishing Company, 1936. 112 pp. $2.50.

Denver National Bank. Here he signed a note plus 7% interest which he agreed to pay in monthly or semi-monthly installments. The bank then turned over to the department store the full amount of the frozen account. If the customer paid his installments promptly he received with his last payment a return of 1%, reducing the rate to 6%. When one of these store accounts became uncollectible, the bank notified the store and received at once a check for the unpaid balance of the loan. Obviously so long as the department stores were chosen carefully the losses were nonexistent.

The authors were not so successful in applying this method to professional men and small shops, and fell back on their general plan of two endorsers without success. The general plan, however, was well conceived and must have proved very profitable. The book includes specimen blanks and other detailed information. It ought to give pause to many bank officers who are sitting up nights wondering what to do with their surplus funds.

Mr. Reddaway states in his preface that, in spite of the great number of books recently produced about Russia, there is a surprising lack of books dealing comprehensively with the Russian financial system. His book,[15] he tells us, was written at the end of 1934 for the Adam Smith prize at Cambridge. "The material was almost all gathered at first hand in a series of interviews with officials at the State Bank in Moscow." The object of this essay is to get away from the surface phenomena and to see how the monetary and financial system works, the functions it performs, and how it fits in with the rest of the national economy.

In the brief space of 106 pages it is not always easy to make clear the fundamental principles of a system about which the average reader has only the vaguest impressions. There are places which are hard reading and other places where the reader wonders if perchance the author has thought his problem through clearly before trying to write it. The ruble seems to have all sorts of values depending on who has it and where he uses it. One of these values is that given it by the government which has apparently found it necessary to have some monetary unit of account in order to measure the comparative productive costs of their manufacturing and agricultural units. They perhaps had some rude awakenings to the losses involved in the wastes of inefficiency.

It is impossible in a brief space to give a reasonable account of a book so condensed. It presents much information about a complex subject. Perhaps, as the author believes, one great difficulty is that the Soviets have not yet solved their own problem and the financial conditions are in flux.

[15] Reddaway, W. B., *The Russian Financial System.* London: Macmillan and Co., 1935. 106 pp. $2.25.

BOOK LIST

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Accounting

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Business Cycle

*Dulles, Eleanor Lansing. *Depression and Reconstruction.* Philadelphia: University of Pennsylvania Press. 352 pp. $3.00.

Business and Economic History

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Johnson, E. A. J. *Some Origins of the Modern Economic World.* New York: The Macmillan Company. 170 pp. $1.35.

Economic Institutions and Planning

*Agar, Herbert and Tate, Allen, Editors. *Who Owns America?* Boston: Houghton Mifflin Company. 353 pp. $3.00.

Beard, William. *Create the Wealth.* New York: W. W. Norton & Company. 319 pp. $3.00.

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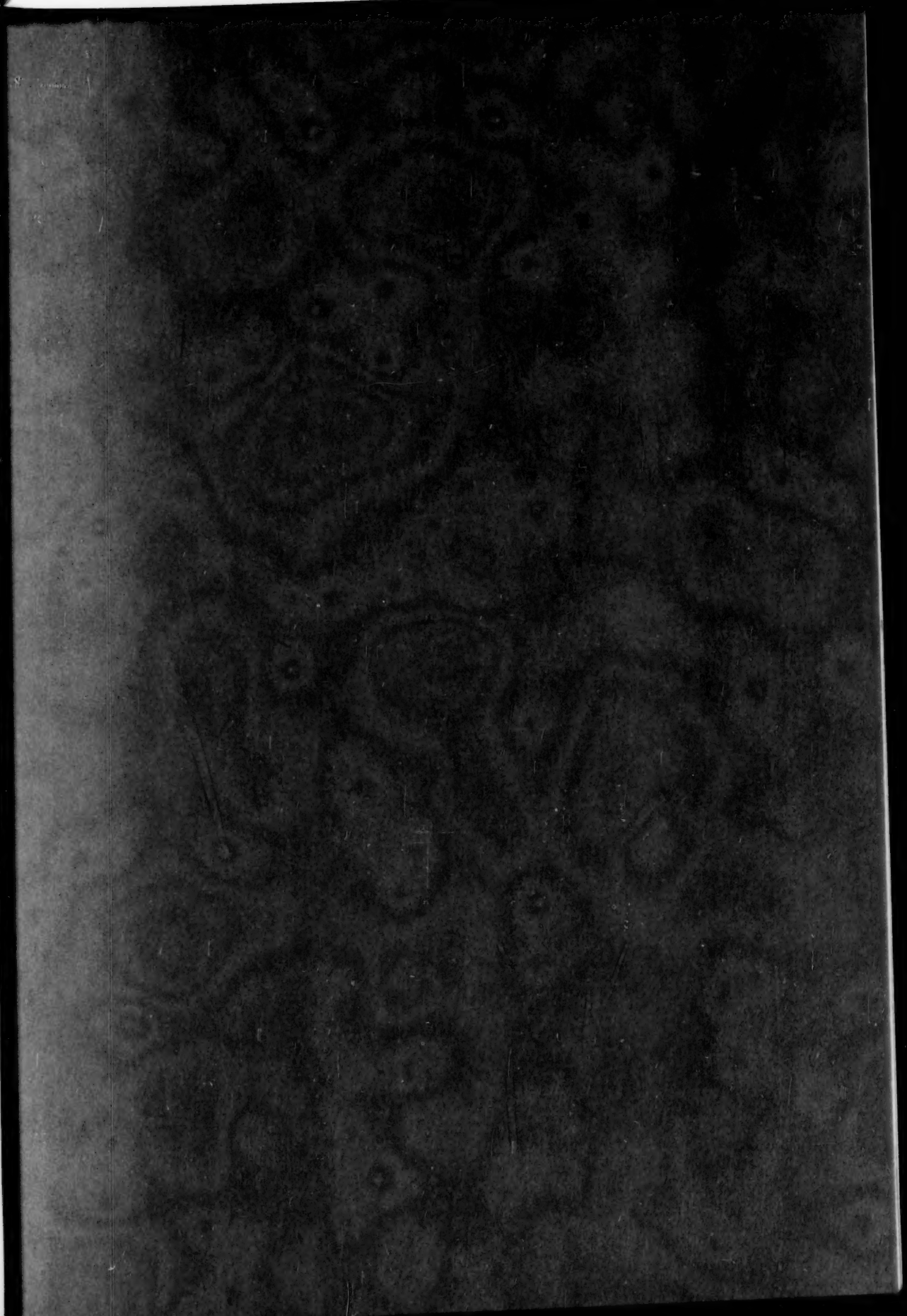

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